

Comments and Responses
Big Stone II's PSD Air Quality Permit and Big Stone's Title V Air Quality Permit

The South Dakota Department of Environment and Natural Resources (DENR) public noticed the original draft Prevention of Significant Deterioration (PSD) air quality permit in April 2006. The public comment period was extended for 30 days which ended on June 26, 2006. Comments were received from the following organizations/individual:

- Clean Water Action – Minneapolis, Minnesota;
- Environmental Protection Agency (EPA), Region 8 – Denver, Colorado;
- Otter Tail Power Company – Fergus Falls, Minnesota;
- Rocky Mountain Clean Air Action – Denver, Colorado;
- Scott Anderson – Flandreau, South Dakota; and
- Sierra Club, George E. Hayes, Attorney at Law – San Francisco, California.

During the public comment period and following, Otter Tail Power Company submitted changes to the application, which resulted in DENR reviewing the addendum to the application and revising the draft PSD air quality permit. In addition, during this time period DENR revised and renewed Otter Tail Power Company's Title V air quality permit for Big Stone I. DENR moved the plantwide limits for sulfur dioxide and nitrogen oxide into the Title V air quality permit, as requested by EPA.

The revised draft PSD air quality permit and draft Title V air quality permit were public noticed on January 30, 2008, with the public comment period ending February 29, 2008, except for the Sierra Club. George E. Hayes, representing the Sierra Club, requested an extension. DENR granted an extension and notified Mr. Hayes that he had until March 14, 2008, to submit comments for the Sierra Club. The following submitted comments on the revised draft PSD air quality permit and draft Title V air quality permit:

- Environmental Protection Agency, Region 8 – Denver, Colorado;
- Otter Tail Power Company – Fergus Falls, Minnesota; and
- Sierra Club, George E. Hayes, Attorney at Law – San Francisco, California.

This document contains DENR's responses to the comments received during the two public notices on Otter Tail Power Company's draft PSD air quality permit and the public notice on Otter Tail Power Company's draft Title V air quality permit. A summary of the comments and DENR's responses follow.

I. PM2.5 Subject to PSD Review

1. One commenter alleges that Otter Tail Power Company was required to comply with all PSD requirements including monitoring, modeling, and Best Available Technology (BACT) regarding PM2.5, and that DENR could not issue a PSD permit for this facility unless this pollutant was properly addressed. It was further stated that since EPA identified sulfur dioxide and nitrogen oxide as precursors of PM2.5, DENR must monitor, model, and conduct a BACT analysis for these pollutants to address PM2.5. The commenter mentioned that an EPA guidance allows state agencies and sources to use PM10 as a surrogate for PM2.5 on a temporary basis until EPA provides the necessary tools to calculate the emissions of PM2.5 and related precursors, the adequate modeling techniques to project ambient impacts, and guidance regarding the selection of PM2.5 monitoring sites. However, the commenter states that “EPA has resolved most of these issues.”

Response: DENR agrees that Otter Tail Power Company must include monitoring, modeling, and BACT regarding PM2.5 in the PSD application and the appropriate conditions should be included in the permit. As the commenter pointed out, EPA has issued a guidance regarding these issues. On October 23, 1997, a memo issued from John Seitz of EPA states that until PM2.5 implementation tools were available, permitting authorities should use PM10 as a surrogate for PM2.5 in meeting the PSD requirements. On April 5, 2005, a memo issued from Stephen Page of EPA reaffirmed EPA’s position that permitting authorities and sources should use PM10 as a surrogate for PM2.5 in meeting the PSD requirements. EPA stated that if a source meets PSD program requirements for controlling PM10 emissions and analyzes those impacts on PM10 air quality, PM10 will serve as a surrogate approach for reducing PM2.5 emissions and protecting air quality for PM2.5. The basis for this decision is that PM2.5 is “fine” particulate matter equal to or less than 2.5 microns in diameter and is a subset of PM10, which includes both “fine” and “coarse” particulate matter. Coarse particulate matter is greater than 2.5 microns in diameter and equal to or less than 10 microns in diameter. Therefore, using PM10 as a surrogate for PM2.5 means that both fine particulate matter and coarse particulate matter will be analyzed, rather than just fine particulate matter. The PM10 emissions determination thus will reasonably account for PM2.5 precursors as well as particulate matter larger in size than 2.5 microns.

DENR required Otter Tail Power Company to monitor, model, and perform a BACT analysis for PM10 and demonstrate compliance with PM10 National Ambient Air Quality Standards and PSD PM10 increments. By demonstrating compliance with PM10, in accordance with EPA’s memos, Otter Tail Power Company has satisfactorily demonstrated compliance with the PM2.5 National Ambient Air Quality Standards and PSD requirements. DENR included the PM10 limits used to demonstrate compliance as permit limits.

On June 20, 2006, Otter Tail Power Company submitted updates to the proposed Big Stone II facility and included a PM2.5 air quality analysis. The PM2.5 analysis still used PM10 as a surrogate but in this analysis they used models developed for PM10 emissions, PM10 emission rates for point sources, and in some cases, PM2.5 emission rates for volume sources such as unpaved roads, and demonstrated compliance with the PM2.5 National Ambient Air

Quality Standards and PSD requirements. Again, the PM10 emission rates for the point sources used in the model were included in the draft PSD air quality permit as limits.

DENR disagrees with the commenter's statement that EPA has "resolved" most of the issues related to directly analyze PM2.5 emissions and related precursors in a PSD review. One of the key tools necessary would be a model for PM2.5. Currently, there is no EPA approved model for PM2.5 emissions and related precursors such as sulfur dioxide, nitrogen oxide, volatile organic compounds and ammonia. Another key tool is a stack test. EPA has not promulgated a stack test method for PM2.5 emissions. Therefore, the tools necessary for conducting a direct PM2.5 analysis are not available, but the PM10 surrogate fills this requirement as per EPA's policies.

DENR accepted Otter Tail Power Company's analysis using PM10 and PM2.5 emission rates in a PM10 model to demonstrate compliance with the PM2.5 National Ambient Air Quality Standards. The PM10 emission rates for the point sources used in the model were included as limits in the draft PSD air quality permit. Otter Tail Power Company's PM2.5 analysis provides a conservative demonstration since they used PM10 emission rates instead of PM2.5 emission rates in the model and compared the results to the standard established for PM2.5, to demonstrate compliance with the PM2.5 National Ambient Air Quality Standards. Therefore, DENR's analysis of Otter Tail Power Company's application satisfies the PM2.5 requirements and demonstrates that the National Ambient Air Quality Standard for PM2.5 will be met.

2. One commenter alleges that Otter Tail Power Company should have conducted preconstruction monitoring for PM2.5, as required by 40 Code of Federal Regulations (CFR) § 52.21(m) incorporated by reference in Administrative Rules of South Dakota (ARSD) 74:36:09:02.

Response: As discussed above, on October 23, 1997, a memo from John Seitz of EPA stated that until PM2.5 implementation tools were available, permitting authorities should use PM10 as a surrogate for PM2.5 in meeting the PSD requirements. On April 5, 2005, a memo from Stephen Page of EPA reaffirmed EPA's position that permitting authorities and sources should use PM10 as a surrogate for PM2.5 in meeting the PSD requirements.

DENR did not require Otter Tail Power Company to conduct preconstruction monitoring for PM2.5 because DENR followed EPA's guidance for evaluating PM2.5 by using PM10 as a surrogate. Consequently, DENR did require Otter Tail Power Company to conduct preconstruction monitoring for PM10 and the PM10 background concentration is included in the application.

3. One commenter alleges the modeling Otter Tail Power Company conducted was not adequate to demonstrate compliance with the PM2.5 National Ambient Air Quality Standards. The commenter specifically alleged a failure to account for precursors to PM2.5 emissions and condensable PM2.5 emissions, the use of inadequate meteorological data, the

use of an inadequate receptor grid, a failure to consider appropriate background PM2.5 concentrations, and a failure to include PM2.5 emissions from Big Stone I.

Response: The commenter identified the failure to use precursors to PM2.5 emissions and condensable PM2.5 emissions in the PM10 model as a reason not to accept the modeling analysis. As stated in the response to subsection (1) above, Otter Tail Power Company has demonstrated compliance with the PM2.5 National Ambient Air Quality Standards by following EPA's guidance to demonstrate compliance using PM10 as a surrogate. Otter Tail Power Company also submitted additional analysis that goes beyond what EPA requires, demonstrating that, by using PM10 emissions and an EPA approved PM10 model, Otter Tail Power Company's particulate matter emissions can meet the PM2.5 National Ambient Air Quality Standards. Otter Tail Power Company used an EPA approved PM10 model because there is no EPA approved model for PM2.5 emissions and associated precursors. As identified by the commenter, PM2.5 emissions from a subbituminous coal-fired power plant are 53% of the PM10 emissions. DENR concluded, consistent with EPA's guidance, that the modeling of the higher PM10 emission rates accounts for the precursors of PM2.5 emissions given the current technology available for Otter Tail Power Company to demonstrate compliance with the PM2.5 National Ambient Air Quality Standards.

The commenter asserts that the use of inadequate meteorological data and an inadequate receptor grid are reasons to not accept the modeling analysis. The response concerning inadequate meteorological data is addressed in Section XVI, subsection (1). The commenter did not provide any specific detail on why the receptor grid was alleged to be inadequate. Specific requirements for receptor grids are identified at 40 CFR Part 51, Appendix W, section 8.2.2 – Critical Receptor Sites. The current version of this regulation states that the receptor sites for refined modeling should be those containing sufficient detail to estimate the highest concentration. The selection of receptor sites is to be determined on a case-by-case basis, taking into account topography, climatology, monitor sites, etc. The July 1, 2005, version of this section notes that a grid size of 400 receptor points over a 10 by 10 kilometer area should be adequate to determine where the highest concentration location would be found. Otter Tail Power Company used a grid that incorporated the following spacing receptors: 1) One receptor point every 50 meters (~165 feet) along the property boundary; 2) One receptor point every 100 meters (~330 feet) from the property boundary out to 1 kilometer; 3) One receptor point every 500 meters (~1,640 feet) from 1 kilometer to 5 kilometers; and 4) One receptor point every 1,000 meters (3,330 feet) from 5 kilometers to 50 kilometers. This grid system contains more than 5,000 receptor points in a 10 by 10 kilometer area. DENR determined that Otter Tail Power Company's receptor grid complies with this regulation and the requirements related to PM10 modeling in the PM2.5 analysis.

The commenter asserts that the PM2.5 background concentration was inappropriate and the modeling analysis should therefore not be accepted. The commenter did not provide any detail on why the PM2.5 background concentration was inappropriate. As discussed above, DENR did not require Otter Tail Power Company to monitor PM2.5 concentrations at their pre-monitoring site since EPA had determined that PM10 could be used as a surrogate for the PM2.5 analysis.

When Otter Tail Power Company conducted the modeling analysis, it requested DENR's information regarding PM2.5 background concentrations in the area. DENR did not have any PM2.5 monitoring data from an area within the state that could be considered directly representative of the area of the proposed facility. As a result, DENR determined the PM2.5 background concentration by determining the average ratio between PM2.5 and PM10 emissions from four monitoring sites in South Dakota, determining a third deviation of that ratio, and then applying the third deviation to the 2002 ambient monitoring data north of Big Stone I. The confidence interval for three standard deviations is 99.7 percent. This means that, based on the data used, there is a 99.7 percent chance that the background PM2.5 concentrations near Big Stone City would be less than those derived by DENR. DENR considered this a conservative approach. In addition, the calculated PM2.5 concentration was independently substantiated by comparing the concentration derived by DENR to PM2.5 monitoring data obtained in Badlands National Park. The background concentration derived by DENR was, as expected, higher than the concentration obtained by direct monitoring in Badlands National Park.

DENR's review of Otter Tail Power Company's procedures for demonstrating compliance with PM2.5 National Ambient Air Quality Standards indicates that those procedures were reasonable, in compliance with EPA guidance and regulation, and provide an adequate margin of safety by using PM10 emission rates to compare to the PM2.5 National Ambient Air Quality Standards.

II. Big Stone I Subject to PSD

1. One commenter alleges that emission reductions at Big Stone I cannot be used to exempt Big Stone II from PSD review for sulfur dioxide and nitrogen oxide because Big Stone I was originally designed to burn lignite coal and in August 1995, Otter Tail Power Company switched to subbituminous coal. The commenter also alleges that the switch in fuel constitutes a major modification because the change in the method of operation increased emissions of nitrogen oxide and particulate matter greater than the significant threshold, and Big Stone I was not capable of accommodating the use of subbituminous coal before January 6, 1975. The commenter states that Big Stone I was not capable of accommodating any fuel change prior to January 6, 1975 because the facility was not yet legally allowed to operate and the alternative fuel exemption in the definition of a "major modification" would not apply to Big Stone I.

Response: In accordance with 40 CFR § 52.21(b)(2)(i) and (iii)(e), a major modification is defined as "Any physical change in or change in the method of operation of a major stationary source that would result in: a significant emissions increase..." and "A physical change or change in the method of operation shall not include...Use of an alternative fuel or raw material by a stationary source which: (1) The source was capable of accommodating before January 6, 1975, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975 pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR subpart I or 40 CFR 51.166; or

(2) The source is approved to use under any permit issued under 40 CFR 52.21 or under regulations approved pursuant to 40 CFR 51.166”.

In determining if Otter Tail Power Company can consider subbituminous coal as an alternative fuel for the boiler associated with Big Stone I, DENR reviewed the files to determine if Otter Tail Power Company was approved to use subbituminous coal in a permit issued under 40 CFR 52.21 or under regulations approved pursuant to 40 CFR 51.166. The answer is no.

Next DENR looked to see if there were any federally enforceable permit conditions established after January 6, 1975, pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR subpart I or 40 CFR 51.166. Otter Tail Power Company has not been issued a permit under 40 CFR § 52.21, 40 CFR 51, Subpart I, or 40 CFR § 51.166 for Big Stone I. Again, the answer is no.

Therefore, the use of subbituminous coal in the Big Stone I boiler as an alternative fuel is not considered a physical change or change in the method of operation only if the boiler was capable of accommodating subbituminous coal before January 6, 1975. In an EPA memo from Roger Pfaff to Brandon Wagner on September 19, 1979, it is stated that if a source had been designed and commenced construction under PSD prior to January 6, 1975, the source would be treated as being “capable of accommodating” an alternative fuel. Therefore, if the boiler was designed and constructed prior to January 6, 1975, and the design of the boiler could burn subbituminous coal, then the boiler is considered able to accommodate that alternative fuel.

In a September 5, 1972, EPA letter from Irwin Karp (EPA) to H Cowles (Otter Tail Power Company), Otter Tail Power Company began construction of Big Stone I on January 18, 1971, because “a binding agreement or contractual obligation” for construction of the boiler was entered into, and cancellation of the order for the boiler after January 18, 1971 would have resulted in the imposition of cancellation charges. South Dakota did not officially submit its State Implementation Plan for air quality until January 27, 1972. At the time Otter Tail Power Company started constructing Big Stone I, the state did not have an air quality permitting program in place. The first permit the commenter mentioned that DENR issued to Otter Tail Power Company on January 22, 1975, was an air quality “operating” permit; not an air quality “construction” permit. The permit granted permission for the operation of the Big Stone I power plant. The permit does not specify the type of coal that could be burned; it just specified that coal could be used as a fuel.

On December 20, 1993, DENR issued a permit to Otter Tail Power Company that specified the type of fuels that were permitted to be burned in the boiler. The permit lists lignite and subbituminous coals among with several other alternative fuels. In a September 14, 1995, letter from Terry Graumann to Brian Gustafson, Otter Tail Power Company noted that the Big Stone I was in the process of changing the primary fuel from lignite to subbituminous coal. In addition, this letter notes that subbituminous coal was burned in 1988. The switch from lignite coal to subbituminous coal was “transitional”, meaning that Otter Tail Power

Company burned both lignite and subbituminous coal during the switch and did not have to shut down and physically change the boiler to burn subbituminous coal.

DENR concluded that Big Stone I began construction on January 18, 1971 and that the design of the boiler was capable of accommodating subbituminous coal prior to January 6, 1975. Therefore, the switch from lignite to subbituminous coal is not considered to be a physical change or change in the method of operation and is not considered to be a major modification under the PSD program.

Not only was Big Stone I capable of accommodating subbituminous coal, on July 1, 1992, EPA promulgated rules in the PSD program that exempted pollution control projects from being considered a physical change or change in the method of operation. At this time, 40 CFR § 52.21(b)(32) defined a “pollution control project” as any activity or project undertaken at an existing electric utility steam generating unit for purposes of reducing emissions from the unit. Pollution control activities or projects are limited to:

- (1) The installation of conventional or innovative pollution control technology, including but not limited to advanced flue gas desulfurization, sorbent injection for sulfur dioxide and nitrogen oxides controls and electrostatic precipitators;
- (2) An activity or project to accommodate switching to a fuel which is less polluting than the fuel in use prior to the activity or project, including, but not limited to natural gas or coal re-burning, or the co-firing of natural gas and other fuels for the purpose of controlling emissions;
- (3) A permanent clean coal technology demonstration project conducted under title II, section 101(d) of the Further Continuing Appropriations Act of 1985 (sec. 5903(d) of title 42 of the United States Code), or subsequent appropriations, up to a total amount of \$2,500,000,000 for commercial demonstration of clean coal technology, or similar projects funded through appropriations for the Environmental Protection Agency; or
- (4) A permanent clean coal technology demonstration project that constitutes a re-powering project.

A July 1, 1994 EPA memorandum from John S. Seitz states that any activity necessary to accommodate switching to an inherently less-polluting project is considered to be part of the pollution control project. Therefore, changes such as removing the pre-dry heater, changes to the superheater, etc. are considered part of the pollution control project.

Otter Tail Power Company’s switch from lignite to subbituminous coal started in 1995. Subbituminous coal is considered to be a cleaner burning fuel (less polluting) than lignite coal. Therefore, the fuel switch was not considered a physical change or change in the method of operation under EPA’s pollution control project exemption.

On December 31, 2002, EPA revised the definition of a pollution control project. At this time going forward, 40 CFR § 52.21(b)(32) defined a pollution control project as any activity, set of work practices or project (including pollution prevention as defined under paragraph (b)(39) of this section) undertaken at an existing emissions unit that reduces

emissions of air pollutants from such unit. Such qualifying activities or projects can include the replacement or upgrade of an existing emissions control technology with a more effective unit. Other changes may occur that are not considered part of the pollution control project when they are not necessary to reduce emissions through the pollution control project. Projects listed in paragraphs (b)(32)(i) through (vi) of this section are presumed to be environmentally beneficial pursuant to paragraph (z)(2)(i) of this section. In accordance with paragraph (b)(32)(v)(e), switching from high sulfur coal to low sulfur coal (maximum 1.2 percent sulfur content) is considered a pollution control project and is exempt from the PSD permitting program.

On June 24, 2005, the United States Court of Appeals vacated the pollution control project exemptions and held that the exemptions were contrary to the Clean Air Act. Although the United States Court of Appeals vacated the pollution control project rules on June 24, 2005, the decision did not specify how past projects that were considered pollution control projects under existing rules at that time should be handled. See *New York v. EPA*, No. 02-1387 (June 24, 2005). Court decisions do not generally apply retroactively. See, e.g., *Bowers v. Pollution Control Hearings Board*, 13 P.3d 1076, Wash. 2000, at f. 17, where the Court, in addressing an issue of whether the Washington Pollution Control Hearings Board's reliance on a federal NAAQ standard that was vacated after the Board's decision, holds that the Board's reliance was not error. The Court quotes *Aviation W Corp. v. Department of Labor & Industry*, 980 P.2d 701 (Wash. 1999): "The standard under our state's [Administrative Procedure Act] is whether the choice to rely upon the EPA report was rational at the time it was made." Therefore, even if Big Stone I was not able to accommodate the switch from lignite to subbituminous coal, a PSD permit would not have been required at that time because the switch from lignite to subbituminous coal met the definition of a pollution control project.

2. One commenter alleges that the addition of a flue gas condition system in 1997 to reduce visible emissions below the state's opacity limit would be considered a physical change. In addition, the commenter alleges that Otter Tail Power Company's retrofitting of the cyclone feed lines to remove the pre-dryer system was a physical change. Since these activities are considered to be physical changes and related to the switch from lignite to subbituminous coal, the commenter asserts that the switch to subbituminous coal also constituted a major modification since it resulted in an increase in particulate matter and nitrogen oxide emissions.

Response: As discussed in subsection (1) above, DENR has determined that the boiler associated with Big Stone I was capable of accommodating subbituminous coal without any physical changes, and any increase in particulate matter or nitrogen oxide emissions was therefore not subject to a PSD review.

In addition, the term "design of the boiler" in the definition of a major modification is limited to the boiler itself, and not the ancillary equipment associated with the boiler, such as control equipment or coal handling equipment. This interpretation of the PSD rules is verified by a March 26, 1979, EPA letter from Edward Reich to Meyer Scolnick. This letter states that a

change to the use of Eco Fuel II (an alternative fuel) was not a major modification under PSD because there were no changes to the boiler, even though the control system was considered inadequate and new fuel handling systems, etc. needed to be installed. In addition, the letter states that a boiler which could burn coal but which has no existing coal handling facilities associated with it, would still qualify under this alternative fuel exemption. Therefore, DENR concluded that the addition of the flue gas conditioning agent to reduce visible emissions, and the removal of the pre-dryer system, were not considered physical changes to the “boiler”. These changes were not considered to be a major modification under the PSD program.

Also, as discussed in subsection (1) above, the switch from lignite to subbituminous coal meets the definition of a pollution control project. A July 1, 1994, EPA memorandum from John S. Seitz states that any activity necessary to accommodate switching to an inherently less-polluting project is considered to be part of the pollution control project. Therefore, the addition of the flue gas conditioning agent is considered to be part of the pollution control project and this change would not be considered a major modification under the pollution control project regulations.

3. One commenter stated the burning of subbituminous coal resulted in lower steam temperature and affected the overall steam production from the boiler, which required significant modifications to the boiler in order to avoid de-rating the boiler. In addition, the burning of subbituminous coal resulted in damage to the cyclones, which was evident by Otter Tail Power Company’s re-studding and refractory of seven of the twelve cyclones in the fall of 1998. The commenter asserts that these physical changes demonstrate that the boiler was not capable of accommodating subbituminous coal.

Response: In accordance with 40 CFR § 52.21(b)(2)(iii)(a), “A physical change or change in the method of operation shall not include...routine maintenance, repair, and replacement.” Therefore, the argument that an increase in maintenance to re-stud and refract the cyclones on an annual basis constitutes a physical change, is not consistent with the definition of a physical change or change in the method of operation.

As discussed in subsection (1) above, the switch from lignite to subbituminous coal meets the definition of a pollution control project. A July 1, 1994 EPA memorandum from John S. Seitz states that any activity necessary to accommodate switching to an inherently less-polluting project is considered to be part of the pollution control project. Therefore, the re-studding and refractory of the cyclones are considered part of the pollution control project and not considered to be a major modification.

4. One commenter alleges that the switch from lignite to subbituminous coal and the changes to the boiler to accommodate subbituminous coal increased the capacity of the boiler. The commenter states that Otter Tail Power Company had to redesign the superheater to avoid overheating and allow for the recovery of that capacity as discussed in subsection (3) above, resulting in an increase in capacity from burning subbituminous coal. The commenter notes

that the amount of coal burned in the boiler is similar to the amount of lignite burned annually.

Response: As discussed in subsection (1) above, the switch from lignite to subbituminous coal was not a major modification because subbituminous coal was an alternative fuel for Big Stone I, and the switch from lignite to subbituminous coal met the requirements for a pollution control project. Therefore, the increase or decrease in resulting emissions is not subject to a PSD review.

In addition, a July 1, 1994, EPA memorandum from John S. Seitz states that any activity necessary to accommodate switching to an inherently less-polluting project is considered to be part of the pollution control project. Therefore, the repairs to the superheater were considered maintenance, and the addition of primary superheater surface area to regain heat loss would be considered part of the pollution control project and not a major modification.

5. One commenter alleges that Otter Tail Power Company modified Big Stone I to provide steam to a co-located ethanol plant. It is asserted that the addition of lines to provide steam to the ethanol plant was a physical change and a change in method of operation to a cogeneration facility, and Otter Tail Power Company projected an increased coal burning rate of 2-2.5% to accommodate that change. The commenter alleges that the coal burned represents an increase in both hourly and annual emissions that should have undergone review for applicability for both New Source Performance Standards as well as PSD, and that this physical change and change in method of operation to the Big Stone plant was also a major modification that should have triggered a PSD review for at least sulfur dioxide and particulate matter.

Response: In accordance with 40 CFR § 52.21(b)(2)(i), a major modification is defined as any physical change in or change in the method of operation of a major stationary source that would result in a significant emissions increase of a regulated New Source Review (NSR) pollutant and a significant net emissions increase of that pollutant from the major stationary source. In accordance with 40 CFR § 52.21(b)(2)(iii)(f), a physical change or change in the method of operation does not include an increase in the hours of operation or in the production rate, unless the change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975, pursuant to 40 CFR 52.21, or under regulations approved pursuant to 40 CFR subpart I or 40 CFR 51.166.

Otter Tail Power Company did not have any federally enforceable permit conditions established after January 6, 1975 that prohibited its hours of operation or production rate, and has not been issued a permit under 40 CFR § 52.21, 40 CFR 51, Subpart I, or 40 CFR § 51.166 for Big Stone I. As such, there are no restrictions on the Big Stone I facility to increase its actual hours of operation or production rate.

On November 28, 2000, Otter Tail Power Company submitted an application to DENR requesting a minor permit amendment to allow Big Stone I to provide steam to the proposed ethanol plant. The application provided emission calculations addressing whether the change

would have a significant net increase of emissions. The application identified calendar years 1999 and 2000 as its baseline year. The application stated that there would not be any significant increase of emissions.

In accordance with 40 CFR § 52.21(b)(23)(i) and (40), a significant increase of emissions is defined as a net emissions increase, or the potential of a source to emit any of the following pollutants, at a rate of emissions that would equal or exceed any of the following rates:

- (1) Carbon monoxide: 100 tons per year;
- (2) Nitrogen oxides: 40 tons per year;
- (3) Sulfur dioxide: 40 tons per year; and
- (4) Particulate matter: 25 tons per year of particulate matter emissions; or 15 tons per year of PM₁₀ emissions.

On April 2, 2001, Otter Tail Power Company submitted additional information regarding its request for a minor permit amendment. The application notes that an increase in the hours of operation or production rate is not considered a physical change or change in the method of operation. In addition, Otter Tail Power Company cited its emission calculations as finding that no significant emissions increase would occur.

In DENR's statement of basis, DENR agreed that the proposal to provide steam to the ethanol plant was not considered to be a major modification. On May 14, 2001, DENR notified EPA, North Dakota, Minnesota, and Otter Tail Power Company of its review. On May 16, 2001, DENR public noticed the change in the local paper. Both EPA and Otter Tail Power Company submitted comments on that review and draft permit. On July 24, 2001, DENR informed both EPA and Otter Tail Power Company of its final decision. EPA did not object. Therefore, the permit was issued on August 8, 2001.

In this particular case, DENR has the unique ability to examine Otter Tail Power Company's actual emissions resulting from this change, since the requested change was actually permitted. DENR therefore can verify that the change did not significantly increase emissions. Table #1, #2, #3, and #4 identifies Otter Tail Power Company's actual emissions that have occurred since this minor permit amendment was permitted by DENR in 2001. As the table notes, none of the identified pollutants exceed the significant net increase thresholds. Indeed, for the most part, Otter Tail Power Company has reduced its emissions.

Table #1 – Otter Tail Power Company Sulfur Dioxide Emission Comparison

Year	Sulfur Dioxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	19,612	-	-
2002	11,756	Decrease of 7,856	No
2003	12,258	Decrease of 7,354	No
2004	14,293	Decrease of 5,319	No
2005	10,643	Decrease of 8,969	No
2006	11,989	Decrease of 7,623	No

Year	Sulfur Dioxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
2007	9,054	Decrease of 10,558	No

Table #2 – Otter Tail Power Company Nitrogen Oxide Emission Comparison

Year	Nitrogen Oxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	20,118	-	-
2002	14,856	Decrease of 5,262	No
2003	15,862	Decrease of 4,256	No
2004	17,032	Decrease of 3,086	No
2005	13,813	Decrease of 6,305	No
2006	14,681	Decrease of 5,437	No
2007	10,033	Decrease of 10,085	No

Table #3 – Otter Tail Power Company PM10/TSP Emission Comparison

Year	PM10/TSP (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	367	-	-
2002	234	Decrease of 133	No
2003	28	Decrease of 339	No
2004	29	Decrease of 338	No
2005	27	Decrease of 340	No
2006	30	Decrease of 337	No
2007	203	Decrease of 164	No

Table #4 – Otter Tail Power Company Carbon Monoxide Emission Comparison

Year	Carbon Monoxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	540	-	-
2002	490	Decrease of 50	No
2003	527	Decrease of 13	No
2004	558	Increase of 18	No
2005	442	Decrease of 98	No
2006	490	Decrease of 50	No
2007	396	Decrease of 144	No

- One commenter alleges that Otter Tail Power Company modified Big Stone I with its 2005 HP-IP turbine efficiency improvement project. The commenter alleges that Otter Tail Power Company “illegally” modified Big Stone I without obtaining the proper PSD permit when it

installed a redesigned high pressure and intermediate pressure (HP/IP) steam turbine during its 2005 maintenance outage.

Response: On May 4, 2004, Otter Tail Power Company submitted an application for a proposed high pressure and intermediate pressure turbine efficiency improvement project. Otter Tail Power Company identified the project as routine maintenance, repair and replacement, but also submitted emission calculations identifying that no significant increase of emissions would occur as a result of the project.

In accordance with 40 CFR § 52.21(b)(2)(i), a major modification is defined as any physical change in, or change in the method of operation of, a major stationary source that would result in a significant emissions increase of a regulated NSR pollutant and a significant net emissions increase of that pollutant from the major stationary source.

Otter Tail Power Company used April 2000 through March 2002 as its baseline period. In the calculations, Otter Tail Power Company excluded the amount of emissions that were contributed to the ethanol plant because the use of the steam to the ethanol plant was not in operation during the baseline period.

Otter Tail Power Company's actual operations in 1999 and 2000, as set forth in Table #5, demonstrate that the boiler accommodated more heat input than was used in Otter Tail Power Company's projected emission calculations in its application for this project. Therefore, the boiler was capable of accommodating the additional demand during the baseline period. DENR therefore concluded that Otter Tail Power Company was correct in excluding the emissions associated with the additional demand from the ethanol plant in accordance with 40 CFR § 52.21 (b)(41)(ii)(c).

Table #5 – Otter Tail Power Company Emission Comparison

Year	Heat Input (Million Btus per Year)
Baseline (Actual)	39,722,049
Baseline (projected with ethanol plant)	40,507,564
1999	41,746,674
2000	40,236,712

On May 20, 2004, Otter Tail Power Company submitted additional information on the proposed high pressure and intermediate pressure turbine efficiency improvement project. In particular, Otter Tail Power Company was answering the question: is the boiler or the turbine the limiting factor? Otter Tail Power Company determined, after reviewing the operations, the boiler and turbine were closely matched.

On July 2, 2004, DENR submitted a letter agreeing the project was not a major modification and required Otter Tail Power Company to submit annual emission data for the next five years to verify this determination. A copy of the letter was submitted to EPA.

In this particular case, DENR has the unique ability to examine Otter Tail Power Company's actual emissions occurring after the requested change was permitted, to verify that the change did not significantly increase emissions. Table #6, #7, #8, and #9 identify Otter Tail Power Company's actual emissions that have occurred since this project was permitted by DENR in 2004. As the table notes, none of the identified pollutants exceed the significant net increase thresholds and in fact, Otter Tail Power Company has reduced its emissions.

Table #6 – Otter Tail Power Company SO2 Emission Comparison

Year	Sulfur Dioxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	13,582	-	-
2005	10,643	Decrease of 2,939	No
2006	11,989	Decrease of 1,593	No
2007	9,054	Decrease of 4,528	No

Table #7 – Otter Tail Power Company NOx Emission Comparison

Year	Nitrogen Oxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	16,637	-	-
2005	13,813	Decrease of 2,824	No
2006	14,681	Decrease of 1,956	No
2007	10,033	Decrease of 6,604	No

Table #8 – Otter Tail Power Company PM10/TSP Emission Comparison

Year	PM10/TSP (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	304	-	-
2005	27	Decrease of 277	No
2006	30	Decrease of 274	No
2007	203	Decrease of 101	No

Table #9 – Otter Tail Power Company Carbon Monoxide Emission Comparison

Year	Carbon Monoxide (tons/year)	Baseline Increase or Decrease (tons/year)	Exceed PSD Significant Threshold?
Baseline	545	-	-
2005	442	Decrease of 103	No
2006	490	Decrease of 55	No
2007	396	Decrease of 149	No

Besides the project not being considered a major modification, the project would not have required any emission reductions because BACT would not have applied. As defined in 40 CFR §52.21(b)(12), best available control technology applies to a new or modified affected emissions unit and/or pollutant emission activity. In this scenario, the change is to the steam turbine and not the boiler. The boiler is the emission unit. The steam turbine does not generate air emissions.

Even if this project would increase emissions by de-bottlenecking the boiler, BACT would not apply to the boiler because the boiler was not physically modified. This position is consistent with that taken by EPA in a February 8, 2000, letter from Robert Miller, EPA Region V to Lloyd Eagan, Wisconsin.

III. Single Source

1. One commenter asserted that DENR cannot allow Big Stone II to avoid PSD review for sulfur dioxide and nitrogen oxide by obtaining offsets, because DENR did not find that Big Stone II and Big Stone I are part of one stationary source, the PSD regulations do not allow one new major source to avoid PSD review by obtaining emissions offsets from another major source, and the PSD regulations do not provide for emissions trading between separate sources to avoid PSD.

Response: In DENR's original Statement of Basis, it was noted that Big Stone II's proposed operations have uncontrolled emissions of particulate, sulfur dioxide, nitrogen oxide, and carbon monoxide all greater than 100 tons per year. Since the uncontrolled emissions from the Big Stone II project exceeded the major source threshold for the PSD program, the Big Stone II project is a major source in and of itself. Therefore, DENR determined that a single source determination was not necessary for determining if PSD was applicable to the Big Stone II project.

However, there is no question that Big Stone II and the Big Stone II project, if constructed and operated, would constitute a "single source". Under 40 CFR § 52.21(b)(5), a stationary source is defined as any building, structure, facility, or installation which emits or may emit a regulated NSR pollutant. Under 40 CFR § 52.21(b)(6), a "building, structure, facility or installation" is defined as all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control), except the activities of any vessel. Pollutant-emitting activities are considered as part of the same industrial grouping if they belong to the same "Major Group" (e.g., which have the same first two digit code) as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement (U. S. Government Printing Office stock numbers 4101-0066 and 003-005-00176-0, respectively).

Otter Tail Power Company's Big Stone I and the proposed Big Stone II project will be operated by the same operator, will be located on contiguous properties, and will have the

same Source Classification Code of 4911. Therefore, Big Stone I and Big Stone II are a single source and Big Stone I and Big Stone II may offset emissions between each other.

IV. Significant Net Emission Increase

1. One commenter states that Big Stone II must be considered a major modification for sulfur dioxide and nitrogen oxide based on the following:
 - The commenter argues that the only unit with specific limits for the Big Stone II unit are the New Source Performance Standard limits of 1.4 pounds of sulfur dioxide per megawatt-hour (gross) and 1.0 pounds of nitrogen oxide per megawatt-hour (gross). Based on these emission limits, the potential to emit for both pollutants is greater than the significant threshold for sulfur dioxide and nitrogen oxide;
 - The commenter argues that the proposed plantwide caps in the draft Title V air quality permit do not specifically limit the potential to emit of Big Stone II to less than the significant levels. At best, the plantwide caps could be construed to limit potential to emit of the new units to no more than 13,178 and 16,448 tons of sulfur dioxide and nitrogen oxide per year, respectively;
 - The commenter argues that the procedures used for netting emissions was flawed by using prospective (proposed) unrelated emission decreases to counterbalance proposed emission increases without examining all previous contemporaneous emission changes, not properly documenting all contemporaneous emission changes, and not ensuring emission decreases are covered by federally enforceable restrictions;
 - The commenter argues that the HP-IP turbine efficiency project, which occurred in 2005, caused an emission increase of sulfur dioxide and nitrogen oxide because it occurred after the baseline actual emissions period of 2003-2004; and
 - The commenter argues that the proposed plantwide caps for sulfur dioxide and nitrogen oxide do not limit emissions from the Big Stone I unit, does not ensure the practical enforceability of the emission reductions, and does not require that such routing of emissions occurs before startup of Big Stone II.

Response: A major modification is defined as any physical change in, or change in the method of operation of, a major stationary source that would result in a significant increase of a regulated New Source Review (NSR) pollutant and a significant net emissions increase of that pollutant from a major stationary source. See 40 CFR § 52.21(b)(2).

DENR agrees that the Big Stone II project meets the first part of the definition for a major modification because the Big Stone II project will be a physical change or a change in the method of operation at the Big Stone I facility. However, DENR disagrees that the Big Stone II project has a significant net emission increase that exceeds 40 tons per year for sulfur dioxide or nitrogen oxides.

Section III discusses the issue of “one stationary source”; Big Stone I and II are considered to be one stationary source. One stationary source is allowed to trade, offset, etc., emissions between emissions units to forgo a PSD review.

The commenter argued that the only unit specific limits for Big Stone II are those derived from a New Source Performance Standard. DENR agrees that those are the only specific limits for sulfur dioxide and nitrogen oxide specifically identified in the PSD air quality permit, because the practically enforceable limits placed on the stationary source (Big Stone I and II) were removed from the draft PSD air quality permit at the commenters request and placed in the draft Title V air quality permit. DENR placed the sulfur dioxide and nitrogen oxide New Source Performance Standard limits in the draft PSD air quality permit because such is required under 40 CFR § 52.21(j).

DENR disagrees that the plantwide sulfur dioxide and nitrogen oxide limits are not specific to Big Stone I or II. Permit condition 9.2 and 9.4 of the draft Title V air quality permit establish a plantwide limit for sulfur dioxide and nitrogen oxide, respectively. These plantwide limits cannot be construed to limit the emissions from just the new units and not the existing units. This limit applies to all emission units that emit sulfur dioxide and nitrogen oxide at both the existing Big Stone I and the proposed new Big Stone II facilities. DENR considers the plantwide limits enforceable as a practical matter as discussed in subsection (3) below.

The commenter brought up changes to Big Stone I, such as the supplying of steam to an ethanol plant and turbine efficiency projects, as increases in sulfur dioxide and nitrogen oxide emissions. However, as set forth in Section II, these changes would not increase emissions and are not considered to be major modifications. Therefore these projects are not considered in a netting analysis.

DENR reviewed past changes and determined that there were no changes that caused an increase or decrease in emissions prior to the proposed plantwide limit. The proposed plantwide limit is a credible emission decrease since the decrease was not relied on in the past, is federally enforceable based on the emission limit, testing, monitoring, record keeping and reporting requirements contained in the draft Title V air quality permit, and has the same health and welfare significance as the proposed increase from the source as discussed in Section IX.

The commenter discusses a netting analysis by emission unit and references EPA's New Source Review Manual. The netting approach analyzed by the commenter and discussed in EPA's manual does not consider an approach where the emissions unit's emissions are routed through a common stack and common control equipment. When both Big Stone I and Big Stone II are in operation, there is no clear cut method to distinguish how much sulfur dioxide produced specifically by Big Stone I or by Big Stone II is being controlled by the control equipment. Therefore, the approach used by DENR in the analysis was to review and compare the existing actual plantwide emissions to the allowable plantwide emissions proposed by the applicant. In this case, the plantwide allowable emissions as limited in the Title V draft permit, minus the base line plantwide actual emissions, equals zero. Therefore, there is no net increase in emissions.

This type of approach is reinforced in 40 CFR 52.21(a)(2)(v), which allows for the establishment of plantwide applicable limits.

2. One commenter notes there should be an analysis to demonstrate that Otter Tail Power Company can achieve and maintain the proposed plantwide sulfur dioxide and nitrogen oxide emission limits.

Response: Based on research of wet desulfurization systems, a wet desulfurization system is capable of reducing sulfur dioxide emissions to an average emission rate between 0.065 to 0.1 pounds per million Btus. Both Big Stone I and Big Stone II will use the wet desulfurization system to remove sulfur dioxide. Therefore, using the estimated pounds per million Btus for the operations, the potential sulfur dioxide emissions from both units when operating will be approximately 3,300 to 5,000 tons per year, which is demonstrated by the following calculation:

- $$\text{PTE} = [5,609 \text{ MMBtu/hour (Big Stone I)} + 6,000 \text{ MMBtu/hour (Big Stone II)}] \times (0.065 \text{ or } 0.1 \text{ pounds per million Btus}) \times (8,760 \text{ hours per year}) / 2000 \text{ pounds per ton}$$

= 3,305 or 5,084 tons of sulfur dioxide per year

In addition, because both Big Stone I and Big Stone II will use the wet desulfurization system to remove sulfur dioxide at the same time, the new source performance limit of 1.4 pounds per megawatt hour output that is applicable to Big Stone II will also be applicable to Big Stone I during these periods. Therefore, using this emission limit for the operations, the potential sulfur dioxide emissions from both units would be approximately 6,400 tons of sulfur dioxide per year, which is demonstrated by the following calculation:

- $$\text{PTE} = [450 \text{ megawatts (Big Stone I)} + 600 \text{ megawatts (Big Stone II)}] \times (1.4 \text{ pounds per megawatts hour output}) \times (8,760 \text{ hours per year}) / 2000 \text{ pounds per ton}$$

= 6,400 tons of sulfur dioxide per year

If one considers that Big Stone I may be in operation during the startup, shutdown, etc. of Big Stone II and that Big Stone I's sulfur dioxide emissions would not be controlled during these periods, Big Stone I would have to emit approximately 6,800 to 9,900 tons per year before the plantwide limit would be exceeded, which is demonstrated by the following calculation:

- $$\text{PTE} = (13,178 \text{ tons per year (plantwide limit)}) - (3,305 \text{ or } 6,400 \text{ tons per year}) =$$

6,778 to 9,873 tons of sulfur dioxide per year

Based on the actual operational reports for Big Stone I, the average sulfur dioxide emission rate over a calendar year for Big Stone I range from 0.6 to 0.7 pounds per million Btus. Therefore, using this emission rate, the amount of time it would take to emit 6,800 to 9,900 tons of sulfur dioxide per year is approximately 3,400 to 5,900 hours per year, which is demonstrated by the following calculation:

- $$\text{PTE} = (6,778 \text{ or } 9,873 \text{ tons per year}) \times (2,000 \text{ pounds per ton}) / (0.6 \text{ or } 0.7 \text{ pounds per million Btus}) / (5,609 \text{ million Btus per hour}) =$$

3,400 to 5,900 hours per year

Generally, Big Stone I or Big Stone II will be down approximately three to eight weeks per year (504 to 1,344 hours per year). Therefore, Otter Tail Power Company is capable of meeting the sulfur dioxide plantwide applicable limit.

Based on research of selective catalytic reduction systems, a selective catalytic reduction system is capable of reducing nitrogen oxide emissions to an average emission rate between 0.05 to 0.07 pounds per million Btus. Therefore, using the estimated pounds per million Btus for the Big Stone II operations, the potential nitrogen oxide emissions for Big Stone II would be approximately 1,300 to 1,800 tons per year, which is demonstrated by the following calculation:

- $PTE = (6,000 \text{ MMBtu/hour (Big Stone II)}) \times (0.05 \text{ or } 0.07 \text{ pounds per million Btus}) \times (8,760 \text{ hours per year}) / 2000 \text{ pounds per ton} = \mathbf{1,314 \text{ to } 1,840 \text{ tons of nitrogen oxide per year}}$

The new source performance standard limits nitrogen oxide emissions from Big Stone II to a rate of 1.0 pounds per megawatt hour output. Therefore, using this emission limit for the operations, the potential nitrogen oxide emissions from Big Stone II would be approximately 2,600 tons of nitrogen oxides per year, which is demonstrated by the following calculation:

- $PTE = (600 \text{ megawatts MMBtu per hour (Big Stone II)}) \times (1.0 \text{ pounds per megawatts hour output}) \times (8,760 \text{ hours per year}) / 2000 \text{ pounds per ton} = \mathbf{2,628 \text{ tons of nitrogen oxides per year}}$

In essence, Big Stone I must reduce its nitrogen oxide emissions by approximately 1,300 to 2,600 tons per year, which means it could only emit approximately 13,800 to 15,100 tons of nitrogen oxides per year, which is demonstrated by the following calculation:

- $PTE = (16,448 \text{ tons per year (plantwide limit)}) - (1,314 \text{ or } 2,268 \text{ tons per year}) = \mathbf{13,820 \text{ to } 15,134 \text{ tons of nitrogen oxides per year}}$

Otter Tail Power Company submitted its application in 2005. The plantwide limit is based on the average of the nitrogen oxide emissions emitted in calendar years 2003 and 2004. In the application, Big Stone I stated it planned to use its over-fire air system more aggressively. Reviewing Big Stone I's annual operating reports for calendar years 2005, 2006, and 2007, Big Stone I emitted 13,813, 14,681, and 10,033 tons of nitrogen oxides per year, respectively. Therefore, Otter Tail Power Company is capable of meeting the nitrogen oxide dioxide plantwide applicable limit.

3. Another commenter alleges the sulfur dioxide and nitrogen oxide emission limits are unenforceable because the permit does not require sufficient periodic monitoring and/or monitoring that ensures compliance.

Response: Permit condition 1.1 in the draft Title V air quality permit requires the owner or operator to construct and operate each unit and its associated control equipment at all times unless otherwise specified in the permit. In addition, permit condition 1.1 states that the control equipment shall be operated in a manner that achieves compliance with the conditions of this permit at all times. Otter Tail Power Company did not request an

exemption for Big Stone II to operate when the wet scrubber is down for repairs and/or preventative maintenance. Unit #13 must be operated with the wet flue gas desulfurization and selective catalytic reduction control device operational to be able to meet the sulfur dioxide emission limits in permit condition 5.1 of the draft PSD air quality permit. Therefore, Big Stone II is not capable of operating when the wet scrubber is down for repairs or preventative maintenance.

DENR proposed a plantwide limit of 13,278 tons per 12-month rolling period for sulfur dioxide and 16,448 tons per 12-month rolling period for nitrogen oxide. To ensure the plantwide limit is enforceable in a practical manner, compliance with the 12-month rolling period limit is based on EPA's Acid Rain Program since both the existing Big Stone I facility and the proposed Big Stone II project are required to meet the Acid Rain Program requirements. The Acid Rain Program requires Big Stone I, and will require Big Stone II, to install a continuous emission monitoring system to monitor sulfur dioxide and nitrogen oxide emissions. This system is used to verify that Otter Tail Power Company is maintaining its sulfur dioxide allowance and to monitor its nitrogen oxide emissions, in tons per year, in accordance with this program. The Acid Rain Program does not require short term emission limits, such as percent reduction, control efficiencies, etc., to ensure that the annual sulfur dioxide allowances are being met. DENR proposes to use the same continuous emission monitoring systems to track the sulfur dioxide and nitrogen oxide emissions from these two units.

DENR believes that there are sufficient requirements in the draft Title V air quality permit to ensure that the sulfur dioxide and nitrogen oxide limits are enforceable in a practical manner and to allow Big Stone II to forgo a PSD review. Permit condition 9.2 and 9.4 limit sulfur dioxide emissions from all units to 13,278 tons per 12-month rolling period, and nitrogen oxide emissions from all units to 16, 448 tons per 12-month rolling period. These same permit conditions specify that sulfur dioxide and nitrogen oxide emissions from Unit #1 and #13 shall be based on continuous emission monitors. The sulfur dioxide emissions from the remaining units will be based on the sulfur content of the fuel, the amount of fuel burned in each unit, and short term nitrogen oxide emissions. Permit condition 8.3 requires that the sulfur content be determined by a fuel supplier's certifications, and if Otter Tail Power Company is not able to obtain a certification, an analysis of the sulfur content of a fuel sample. The plantwide sulfur dioxide limit includes periods of startup, shutdown, and malfunctions.

The nitrogen oxide emissions from the remaining units will be based on the short term nitrogen oxide emission limits in permit condition 9.5 of the draft Title V air quality permit. Compliance is based on EPA approved stack performance tests.

Permit condition 9.6 does allow Unit #1 to continue to operate when the wet scrubber is down for repairs or preventative maintenance, etc., but only when the plantwide limit in permit condition 9.2 is not exceeded. The amount of sulfur dioxide emitted during this time will be continuously recorded by continuous emission monitoring equipment.

Permit condition 8.4 requires continuous sulfur dioxide and nitrogen oxide monitors and requires them to be operated at all times, including periods of startup, shutdown, malfunction or emergency conditions, and during all periods when the wet scrubber is down for repairs or preventative maintenance and Big Stone I is operated. Permit condition 5.5 requires the amount of sulfur dioxide and nitrogen oxide emissions to be calculated on a monthly basis and a 12-month rolling total calculated each month. Permit condition 5.9 requires the sulfur dioxide and nitrogen oxide 12-month rolling totals for each month in the reporting period to be reported to DENR on a quarterly basis. Permit condition 5.11 requires notification if the 12-month rolling total is exceeded as soon as possible, but no later than the first business day following the day the violation was discovered.

DENR disagrees that the draft permit should specify a maximum length of time for Big Stone I to be operational when the wet scrubber is down for repairs or preventative maintenance. As specified above, a continuous emission monitoring system is required to be installed on Big Stone I, and will be installed on and operational at the start of Unit #13 associated with Big Stone II. Both facilities will be subject to the Acid Rain Program and required to meet sulfur dioxide and nitrogen oxide reporting requirements established under those rules. Therefore, compliance with the plantwide sulfur dioxide limit will be based on actual emissions, to include when Big Stone I is operated with or without the wet scrubber.

4. One commenter recommended that DENR establish a wet scrubber control efficiency that takes into account the uncontrolled potential to emit and the actual, sulfur dioxide emissions from the two major sulfur dioxide emitting units (Units #1 and #13). The commenter believes the control efficiency must be specified in the permit in order for the plantwide limit to be enforceable.

Response: As discussed in subsection (3) above, DENR proposed an enforceable condition limiting the sulfur dioxide emissions to 13,278 tons per 12-month rolling period. Compliance with the limit is enforceable as a practical manner by the use of continuous emission monitoring equipment for the two major sulfur dioxide emitting units (Unit #1 and #13). An uncontrolled potential to emit is unnecessary for Unit #1 since the continuous emission monitoring system will record the sulfur dioxide emissions when Unit #1 operates with the wet scrubber down for repairs and/or preventative maintenance. An uncontrolled potential to emit for Big Stone II is unnecessary since Big Stone II is not allowed to operate when the wet scrubber is down for repairs and/or preventative maintenance. The sulfur dioxide emissions from the remaining units will be based on the sulfur content of the fuel and the amount of fuel used in each unit. This plantwide limit includes startups, shutdowns, and malfunctions for each unit.

DENR has placed the appropriate monitoring, record keeping, reporting, etc. requirements in the permit to ensure the plantwide limit is enforceable as a practical matter. DENR disagrees that a control efficiency limit is required to make the plantwide sulfur dioxide emission limit enforceable.

5. One commenter recommended that DENR include a short term limit on sulfur dioxide or nitrogen oxide in the draft Title V air quality permit to protect the short term sulfur dioxide National Ambient Air Quality Standards. The commenter also asserted that DENR should also establish a short term limit for nitrogen oxide because it is a precursor of ozone which has a short term, 8-hour National Ambient Air Quality Standard.

Response: 40 CFR § 52.21(k) requires the owner of the proposed source or modification to demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of:

- (1) Any national ambient air quality standard in any air quality control region; or
- (2) Any applicable maximum allowable increase over the baseline concentration in any area.

Since Otter Tail Power Company is not required to obtain a PSD permit for sulfur dioxide or nitrogen oxide, a review of the National Ambient Air Quality Standards using allowable short term emission limits for sulfur dioxide and ozone (nitrogen oxide is a precursor of ozone) is not required.

EPA established National Ambient Air Quality Standards for certain pollutants, pursuant to section 109 of the Clean Air Act and states are required to attain those standards. The state implementation plan is the means by which a state complies with the Clean Air Act requirement to attain the National Ambient Air Quality Standards, pursuant to section 110(a) of the Clean Air Act. The National Ambient Air Quality Standards do not by themselves impose any obligation on sources. A source is not obligated to reduce emissions or take emission limits as a result of a standard until the State identifies a specific emission reduction measure needed for attainment and that measure is incorporated into the state implementation plan, which is then approved by EPA. See EPA's Appeal Board, Petition No.: II-2006-01, 13. South Dakota is attaining all of the National Ambient Air Quality Standards. As such, South Dakota has not been required to establish measures or limits to attain any of the National Ambient Air Quality Standards.

DENR has monitored for sulfur dioxide and nitrogen oxide in South Dakota to verify that it is attaining the National Ambient Air Quality Standards. As Table #1 indicates, South Dakota is meeting the National Ambient Air Quality Standards based on the state's monitoring network and the ambient monitoring conducted for the Big Stone Project. In addition, the monitoring demonstrate that the sulfur dioxide and nitrogen oxide emissions from all sources, including both non increment consuming and increment consuming sources, are below the allotted PSD increments for Class II areas. The Badlands and Wind Cave are considered Class I areas and have lower increments that are not displayed in Table #1.

Table #1 – National Ambient Air Quality Standard Comparison

Site	SO ₂ ¹	SO ₂ ¹	SO ₂ ²	NO _x ²
	3-hour	24-hour	Annual	Annual
NAAQS ³	0.500	0.140	0.030	0.053
PSD Increment	0.192	0.034	0.008	0.013
Sioux Falls Hilltop	0.030	0.006	0.001	0.006
Big Stone Project	0.010	0.004	0.001	0.005
Badlands	0.004	0.003	0.001	0.001
Wind Cave	0.037	0.008	0.001	0.001

¹ – Maximum concentration from 2005 and in parts per million;

² – Annual average from 2005 and in parts per million; and

³ – “NAAQS” stands for National Ambient Air Quality Standard.

Both the existing Big Stone I facility and the proposed Big Stone II project are required to meet the Acid Rain Program requirements. The Acid Rain Program requires Big Stone I, and will require Big Stone II, to install a continuous emission monitoring system to monitor nitrogen oxide emissions. This system is used to verify that Otter Tail Power Company is maintaining its nitrogen oxide emissions in pounds per million Btus, averaged on an annual basis, in accordance with this program. This program does not require short term emission limitations, such as percent reduction, etc, to ensure that the annual pounds per million Btus are being maintained. DENR proposes to use the same continuous emission monitoring systems to track the nitrogen oxide emissions, to demonstrate compliance with the proposed enforceable condition limiting the nitrogen oxide emissions to 16,448 tons per year.

Based on the modeling results and the existing low sulfur dioxide and nitrogen oxide concentrations in South Dakota, DENR determined that short term limits on Unit #1 and #13 would not be necessary to protect the short term limit for sulfur dioxide and nitrogen oxide. DENR placed the appropriate conditions in the draft Title V air quality permit, such as plantwide limits, monitoring, record keeping, reporting, etc., to ensure protection of the National Ambient Air Quality Standards.

The commenter recommended a short term limit for nitrogen oxide should be required because it is a precursor for ozone, which has a short term 8-hour National Ambient Air Quality Standard. The commenter does not specify how DENR is to determine at a nitrogen oxide emission rate that is protective of the 8-hour National Ambient Air Quality Standard. There is no EPA approved model for ozone that we can use to establish this level. Therefore, DENR disagrees that an arbitrary nitrogen oxide emission limit should be set to protect an 8-hour ozone National Ambient Air Quality Standard.

6. One commenter informed the state that it must not rely on EPA’s inaction as the basis for determination. On page 11 of the original Statement of Basis, DENR states “On December 28, 2000, EPA submitted a section 114 to Otter Tail Power Company concerning the Big Stone I facility. DENR is not aware and has not been informed by EPA of any change at Big Stone I that would have required Big Stone I to obtain a PSD permit. Therefore, emission

offsets from Big Stone I are an acceptable approach.” The commenter states that it is inappropriate for the state to draw such a conclusion from EPA’s inaction. The state must not rely on the lack of an EPA action or determination as the basis for proposing to allow emission.

Response: DENR is not aware of EPA alleging any violations at Big Stone I. Therefore, DENR does not consider Otter Tail Power Company to be in violation of the PSD Program for the Big Stone I facility. However, for full disclosure purposes, DENR noted in its Statement of Basis that it was aware that on December 28, 2000, EPA submitted a section 114 letter to Otter Tail Power Company concerning the Big Stone I facility. DENR has not been informed by EPA of any change in the compliance status at Big Stone I. Therefore, Otter Tail Power Company is being treated as being in compliance and obtaining offsets from the Big Stone I facility is an acceptable approach.

7. One commenter expressed confusion about why DENR chose to analyze emissions only from the years 2003 and 2004 to establish representative conditions, and why a two year average is an acceptable methodology for estimating representative emissions. The commenter believed that 2001 and 2003 should be used to represent average emissions.

Response: In accordance with 40 CFR § 52.21(b)(48), baseline actual emissions for an existing electric utility steam generating unit means the average rate, in tons per year, at which the unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 5-year period immediately preceding the beginning of actual construction. In analyzing an application, DENR is allowed to use a different time period that that selected by the owner or operator upon determining that a different time period is more representative of normal source operation. The year 2003 was not used alone, and 2001 and 2003 were not averaged, because the federal regulations at 40 CFR § 52.21(b)(48)(i) require a 24-month consecutive period.

Otter Tail Power Company chose a period that covered a consecutive 24-month period within a 5-year period prior to beginning construction that best represents normal operating conditions. DENR reviewed other 24-month periods and explained in the original Statement of Basis that 2002 was not representative of normal operating conditions since Big Stone I experienced an extended period of outage when Otter Tail Power Company installed a hybrid baghouse/electrostatic precipitator to control particulate matter emissions. DENR explained in the original Statement of Basis that DENR did not expand the review to 10 years since Otter Tail Power Company was complying in that time frame with the Acid Rain Program requirements, and that time period would not represent normal operation. In the end, DENR agreed that 2003/2004 best represents normal operations based on the annual cumulative heat input to the boiler.

8. One commenter alleges the draft PSD air quality permit fails to ensure compliance with limits for PM₁₀, sulfur dioxide, and nitrogen oxide emissions because the permit does not specify how the baghouses, selective catalytic reduction (SCR) system, and wet scrubber are to be maintained and/or operated.

Response: In accordance with 40 CFR § 52.21, BACT emission limits are to be developed by modeling that demonstrates the new source will not cause an exceedance of the National Ambient Air Quality Standards or the PSD increments. Chapter 4.0 of the draft PSD air quality permit establishes BACT emission limits that ensure the National Ambient Air Quality Standards and PSD increments are not exceeded. Mechanisms for demonstrating compliance are specified in permit condition 1.1 and Chapter 6.0, 7.0, and 8.0. Permit condition 1.1 requires Otter Tail Power Company to operate the control equipment in a manner that achieves compliance with the conditions of the permit at all times. Chapter 6.0 of the draft PSD air quality permit requires Otter Tail Power Company to conduct initial performance tests to demonstrate the equipment is capable of meeting the BACT emission limits. Chapter 7.0 requires Otter Tail Power Company to develop and fugitive dust plan to specify what fugitive dust controls will be implemented, how often opacity readings will be performed, documentation that demonstrate the fugitive dust plan has been implemented, and copies of the opacity readings. Chapter 8.0 requires Otter Tail Power Company to install, maintain, and operate a continuous emission monitoring system for opacity, carbon dioxide, sulfur dioxide, nitrogen oxide, flue gas flow, and carbon monoxide. In addition, the New Source Performance Standards in permit condition 5.1 of the draft PSD air quality permit requires one of several options be used to demonstrate compliance with the particulate matter emission limits for Unit #13. See Section XIV for enforceability of the BACT limits.

Once DENR issues the Title V air quality permit for the operations covered under the draft PSD air quality permit, compliance assurance monitoring and/or periodic monitoring will be included for each unit to determine ranges in which the equipment can operate and demonstrate continuous compliance. The 12-month time period allowed in ARSD 74:36:05:01.01 for submitting an application for a Title V air quality permit for the operations covered under the draft PSD air quality permit is necessary for Otter Tail Power Company to establish those ranges.

V. Plantwide Applicability Limit

1. Two commenters asserted that DENR did not use the Plantwide Applicability Limitation (PAL) rules incorporated in the PSD program appropriately to establish plantwide limits for sulfur dioxide and nitrogen oxide, and that this was done to avoid a PSD review and permit for those pollutants. One commenter stated the PAL provisions are the only methods in the PSD regulations that allow a new unit to be exempt from PSD applicability, but that those provisions do not allow for establishment of a PAL concurrent with the proposed addition of a new unit. Another commenter suggested other legal authorities the state could rely on to create the proposed plantwide caps, specifying: (1) development of a source specific SIP revision for the source; (2) amendment of the SIP by expanding the minor source construction permit program to cover sources requesting synthetic minor emission limits to avoid the PSD program; or (3) amendment of Big Stone's Title V air quality permit to include the proposed new unit with emission limits. Both commenters alleged the plantwide limits in the original draft PSD air quality permit were not appropriate; one of the

commenters alleged the plantwide limits in the draft Title V air quality permit was not appropriate.

Response: In accordance with the suggestion made by EPA, DENR removed the plantwide sulfur dioxide and nitrogen oxide emission limits from the draft PSD air quality permit and included them in Otter Tail Power Company's draft Title V air quality permit for Big Stone I and II as suggested.

Although DENR removed the plantwide limits from the draft PSD air quality permit, it does not agree with the comment that PAL provisions do not allow for the establishment of a PAL concurrent with the proposed addition of a new unit. The preamble to the PAL rules states that a PAL allows emission reductions from emission units to create room for growth; provides a strong incentive for the employment of innovative control technologies and pollution prevention measures to create voluntary emission reduction to facilitate economic expansion; and is a voluntary program that allows a flexible approach to account for changes, including alterations to existing emission units and the addition of new units, at an existing major stationary source. See Fed. Reg. 80207 (December 31, 2002).

DENR disagrees that the PAL provisions are the only methods available for establishing limits that allow a source to avoid a PSD review and permit. A source is allowed to accept enforceable limits that maintain its actual emissions below the major source threshold under the PSD program, and thereby avoid a PSD review and permit. This concept is well established in the definition of "Potential to Emit," which allows the use of enforceable limits in determining potential emissions from a new unit or a modification of an existing unit.

In order for a new unit, or a major modification to an existing unit, to be subject to the PSD rules, its potential to emit and its net emissions must be greater than the significant threshold established in the PSD rules for existing sources, and greater than the major source threshold under the PSD program for new sources. By Otter Tail Power Company accepting enforceable emission limits in its draft Title V air quality permit which maintain actual emissions below the significant threshold under the PSD program, then the source is not subject to the PSD rules for those air pollutants.

Notwithstanding this, however, DENR used a majority of the PAL requirements in establishing the plantwide limits for sulfur dioxide and nitrogen oxide in the draft Title V air quality permit. The following identifies how the conditions in the draft Title V air quality permit relate to the applicable PAL provisions required in 40 CFR § 52.21(aa)(1) through (15):

- By establishing plantwide emission limits for sulfur dioxide and nitrogen oxide in permit condition 9.2 and 9.4, respectively, the requirement in 40 CFR § 52.21(aa)(1) that the owner or operator maintain total source-wide emissions below the PAL level are met;
- Otter Tail Power Company included in the application a list of all the emission units that emit sulfur dioxide and nitrogen oxide emissions, determined baseline actual emissions with supporting documentation, and set forth how it proposes to calculate

monthly and annual emissions on a 12-month rolling total as required in 40 CFR § 52.21(aa)(3). DENR reviewed, approved, and discussed this information in the original Statement of Basis and the Statement of Basis for the draft Title V air quality permit;

- The draft Title V air quality permit establishes plantwide emission limits for sulfur dioxide and nitrogen oxide in permit condition 9.2 and 9.4, respectively based on monthly 12-month rolling totals, as required in 40 CFR § 52.21(aa)(4)(i)(a);
- The public participation requirements for a Title V air quality permit and the renewal of a Title V air quality permit, including giving the public 30 days to comment and the response to all comments, are equivalent to the requirements in 40 CFR §§ 52.21(aa)(4)(i)(b), (5) and (10);
- All permitted emission units are included in determining compliance with the plantwide limits, as required in 40 CFR § 52.21(aa)(4)(i)(d);
- By limiting the emissions of sulfur dioxide and nitrogen oxide in separate permit conditions, DENR met the requirement of regulating emissions of only one pollutant in 40 CFR § 52.21(aa)(4)(i)(e);
- Instead of having a PAL effective period of 10 years, as required in 40 CFR § 52.21(aa)(4)(i)(f), the draft Title V air quality permit is effective for five years;
- The offset specifications in 40 CFR § 52.21(aa)(4)(ii) were not requested by Otter Tail Power Company and were not addressed in the original Statement of Basis or the Statement of Basis for the draft Title V air quality permit. In establishing this PAL, the PAL is allowing Otter Tail Power Company to forgo a PSD review for the Big Stone II project. The established PAL was not developed to allow any other future project to automatically be exempted from a PSD review. Otter Tail Power Company will still be required to submit applications meeting the procedures in Chapter 3.0 of the draft Title V air quality permit for future modifications. As such, the consideration of credible increases and decreases associated with future projects is not applicable;
- The plantwide emission limits for sulfur dioxide and nitrogen oxide were based on one 24 consecutive month period, as required in 40 CFR § 52.21(aa)(6); but instead of adding the significant threshold as allowed in this section, the plantwide limit was more conservatively based just on the 24 consecutive month period;
- The draft Title V air quality permit includes all of the permit requirements in 40 CFR §§ 52.21(aa)(4)(c) and (7), as listed below:
 - ✓ 40 CFR § 52.21(aa)(7)(i) – permit conditions 9.2 and 9.4 establish source-wide emission limits in tons per year based on a 12-month rolling period;
 - ✓ 40 CFR § 52.21(aa)(7)(ii) – permit conditions 9.2 and 9.4 identify that the source-wide emission limit begins on the date Unit #13 begins operation, and that the expiration date is five years from the issuance of the draft Title V air quality permit;
 - ✓ 40 CFR § 52.21(aa)(7)(iii) – permit condition 4.2 specifies that the owner or operator is required to submit an application to renew the draft Title V air quality permit at least 180 days before the permit expiration date, and that if the

application is timely, the current permit shall not expire and shall remain in effect until DENR takes final action on the application;

- ✓ 40 CFR § 52.21(aa)(7)(iv) – permit conditions 9.2 and 9.4 identify that the source-wide emission limit includes periods of startup, shutdown, and malfunctions; and
- ✓ 40 CFR § 52.21(aa)(7)(vi) – permit conditions 9.2 and 9.4 specify that those units with continuous emission monitoring equipment shall use this data to determine monthly emissions and that those units without shall use the sulfur content of fuel and the amount of fuel used to determine sulfur dioxide emissions, and the most recent stack performance test and amount of fuel used to determine nitrogen oxide emissions. The methods in the regulations establish how the continuous emission monitoring systems and performance tests are to be operated or conducted, and specify how the emission rates are to be calculated.
- The draft Title V air quality permit will be effective for five years instead of 10 years, and the reopening procedures in chapter 3.0 of the draft Title V air quality permit meet the reopening procedures specified in 40 CFR § 52.21(aa)(8);
- The draft Title V air quality permit that contains the plantwide limits is required for Otter Tail Power Company to operate Big Stone I and II. If Otter Tail Power Company fails to renew the permit, Otter Tail Power Company will be able to attain the plantwide limits because they will not be allowed to operate. Permit condition 9.2 and 9.4 specify that any relaxation in the permit that increases applicable emissions greater than plantwide limit shall require a full PSD review for the applicable pollutant as though construction had not commenced on those sources. Therefore, if Otter Tail Power Company allowed the permit to expire and then applied to operate at a later date, the procedures in 40 CFR §§ 52.21(aa)(7)(v) and (9) would be applicable. In addition, permit condition 9.2 and 9.4 does not exempt Otter Tail Power Company from other applicable sulfur dioxide and nitrogen oxide emissions limits that are applicable (i.e., new source performance standards, acid rain program, etc.).
- The requirements in 40 CFR § 52.21(aa)(11) would be followed in the reopening procedures in chapter 3.0 of the draft Title V air quality permit if Otter Tail Power Company applied for an increase in the emission limit due to a modification to the facility;
- The draft Title V air quality permit requires the use of continuous emission monitoring systems to determine the sulfur dioxide and nitrogen oxide emissions from the two main units (Unit #1 and #13). The continuous emission monitoring systems are required to be certified in accordance with 40 CFR Part 60, Appendix B and the quality assurance requirements in 40 CFR Part 60, Appendix F; or, the performance specifications in 40 CFR Part 75, Appendix A and the quality assurance requirements in 40 CFR Part 75, Appendix B. See permit condition 8.5 of the draft Title V air quality permit. For the remaining units, the sulfur content and the amount of fuel burned will be used to calculate sulfur dioxide emissions. For the remaining units, the nitrogen oxides emissions will be based on the initial stack performance test or the most recent stack performance test, if applicable, and the amount of fuel used. Permit condition 7.1 allows DENR to require additional tests if warranted. These

requirements meet the specifications in 40 CFR §§ 52.21(aa)(4)(i)(g), (7)(vii), and (12);

- Permit condition 5.1 requires Otter Tail Power Company to maintain any record required by the permit for five years from the date of generation. This includes the monthly 12-month rolling totals to demonstrate compliance with the plantwide limits and the annual certification report. This differs from 40 CFR §§ 52.21(aa)(4)(i)(g), (7)(viii), and (13) only in that the draft Title V air quality permit does not require a copy of the application and annual certification with supporting documentation for five years beyond the duration of the PAL effective period; and
- Permit condition 5.9 requires quarterly reporting instead of semiannual reports; permit condition 5.11 requires the reporting of a permit violation no later than the first business day following the day the violation was discovered; and permit condition 7.6 requires stack performance test reports to be submitted within 60 days of the test instead of three months, as specified in 40 CFR §§ 52.21(aa)(4)(i)(g), (7)(ix), and (14). A list of any emission unit modified or added in the last six months is required under the PAL rules, but DENR is unsure why this is required since Otter Tail Power Company is required to notify DENR, as required in Chapter 3.0 before making any changes to the existing units or adding any new units. The PAL is allowing Otter Tail Power Company to forgo a PSD review for the Big Stone II project. The established PAL was not developed to allow any other future projects to automatically be exempted from a PSD review.

DENR believes that it substantively followed the PAL requirements in establishing the plantwide limits for sulfur dioxide and nitrogen oxide in the draft Title V air quality permit, and the plantwide limits are enforceable in a practical manner. Therefore, Big Stone II is allowed to avoid a PSD review and permit for sulfur dioxide and nitrogen oxide.

VI. Demonstrating Compliance with Plantwide Limit

1. One commenter stated that Otter Tail Power Company failed to provide any data on the characteristics of the coal to be burned, did not provide details on the planned operation, including expected control efficiency of the wet scrubber, and did not provide details on how the nitrogen oxide emission cap would be met. The commenter indicated that DENR cannot simply impose plantwide caps without requiring sufficient documentation and review to verify the plantwide caps can be met by Otter Tail Power Company. The commenter was concerned that DENR could potentially allow for significant violations of the PSD permitting requirements without providing sufficient documentation in the public record to show that the emission caps can be complied with and that the exemptions are warranted.

Response: DENR's proposed plantwide limit establishes the limit in tons per 12-month period, establishes the date when the limit begins, requires continuous emission monitors to be used to record actual emissions, including those during startup, shutdown, and malfunctions, requires records to be maintained, requires a quarterly report of the actual emissions to verify compliance, and states that if the plantwide applicable limit is not met, a

full PSD review is required for sulfur dioxide and/or nitrogen oxide. As such, DENR considers the plantwide limits enforceable as a practical matter.

DENR did conduct a generalized review of the application and DENR's records and determined that Otter Tail Power Company could meet the plantwide limits as discussed in Section VI, subsection (2).

The plantwide limits allow Otter Tail Power Company flexibility in how it operates Big Stone I and Big Stone II to determine compliance. In Section IV, subsection (3), DENR discusses how Otter Tail Power Company will ensure compliance with the plantwide limits. DENR believes the analysis and requirements in the draft Title V air quality permit provide protection to DENR and the public to know that the plantwide limit is being maintained.

2. One commenter mentioned the draft PSD air quality permit does not specify that the continuous opacity and continuous emission monitoring systems should be used to demonstrate compliance with the opacity and associated limits. The commenter recommends that DENR specify that the continuous opacity and emission monitoring systems shall be used to demonstrate compliance.

Response: DENR removed the plantwide sulfur dioxide and nitrogen oxide emission limits from the draft PSD air quality permit and included them in Otter Tail Power Company's draft Title V air quality permit. In accordance with permit condition 4.2 of the draft PSD air quality permit, compliance with the carbon monoxide BACT emission limit for Unit #13 is based on the continuous emission monitoring system.

The continuous emission monitoring system for opacity is required by the New Source Performance Standards for electric utility steam generating units. The opacity limit in permit condition 5.5 of the draft PSD air quality permit is not a BACT emission limit, but instead is a limit required in South Dakota's State Implementation Plan. Compliance with the opacity limit under the State Implementation Plan is based on 40 CFR Part 60, Appendix A, Method 9. In addition, the applicable New Source Performance Standard does not require the use of the continuous opacity monitor to demonstrate compliance, but instead requires 40 CFR Part 60, Appendix A, Method 9. DENR determined that visible emission evaluations conducted in accordance with 40 CFR Part 60, Appendix A, Method 9 are acceptable methods for demonstrating compliance with opacity limits.

The continuous emission monitoring system for mercury required in the New Source Performance Standards has been vacated. As discussed in Section XXVI, Otter Tail Power Company has accepted a plantwide mercury limit and will use continuous emission monitoring systems to demonstrate compliance.

3. One commenter recommended that since the plantwide caps are a means of establishing federally enforceable reductions from Unit #1 to allow Big Stone II to avoid a PSD review and permit for sulfur dioxide and nitrogen oxide, the plantwide caps should take effect immediately upon startup of Unit #13.

Response: DENR based its designation of the start of the plantwide limit to occur after a shakedown period, on an August 7, 1980, Federal Register notice, page 52698, which states that an increase of emissions occurs when the unit becomes operational and begins to emit a pollutant. The Federal Register notice states that “any unit that requires shakedown becomes operational after a reasonable shakedown period (not to exceed 180 days).”

The sulfur dioxide and nitrogen oxide plantwide limits were removed from the draft PSD air quality permit and included in the draft Title V air quality permit. Although DENR believes it is appropriate to designate the start of the plantwide limit shall begin after a reasonable shakedown period, Otter Tail Power Company has agreed to start the plantwide limit upon the initial startup of Unit #13. Permit condition 9.2 and 9.4 specify the plantwide limits begin at the initial startup of Unit #13.

VII. Authority to Impose Plantwide Limit

1. One commenter asserted that DENR does not have the legal authority to impose plantwide emissions caps and exempt Big Stone II from PSD in the minor source construction and operating permit program or the Title V air quality permit program.

Response: South Dakota is unique from other states in that its Title V air quality permit program constitutes its construction and operating permit program for major stationary sources when a PSD air quality permit is not required. ARSD 74:36:05:02 states “A person may not construct, install, modify, revise, or operate any source or unit...until the applicable preconstruction permit or Part 70 operating permit has been issued...” New sources or existing sources that are not applicable to the PSD program are required to obtain a Title V air quality permit or modify the existing Title V air quality permit, before construction begins on the new facility or the modification to the existing facility, respectively. Therefore, the operational limits necessary to exempt a source from the PSD program are, by virtue of the requirements of ARSD 74:36:05:02, in place before construction is commenced.

DENR is able to restrict the potential to emit of a major stationary source in the Title V air quality permit program (ARSD Chapter 74:36:05). Specifically, ARSD 74:36:05:16.01(8) allows DENR to condition the permits with emission limits and standards, including operational requirements and limits for all regulated emission units, necessary to assure compliance with applicable requirements under the Clean Air Act. ARSD 74:36:05:16.01(9) allows DENR to condition the permits with appropriate monitoring, recordkeeping, and reporting to ensure the operational requirements and limits are enforceable in a practical manner. Through this process, DENR has the authority to issue enforceable operational limits in the Title V air quality permit which allow a facility to avoid the PSD program.

DENR has the legal authority to require plantwide enforceable limits on sulfur dioxide and nitrogen oxide emissions in Big Stone I's Title V air quality permit, such that Big Stone II is allowed to avoid a PSD review and permit for those air pollutants.

VIII. Compliance Provisions in Title V Permit

1. One commenter is concerned that the draft Title V air quality permit does not specify how emissions will be determined when the Continuous Emission Monitoring (CEM) systems are down for system breakdowns, repairs, calibration checks, zero and span adjustments, and when the units are not in operation. The commenter suggests that the draft Title V air quality permit require collection of other data that can verify emissions, such as the amount of fuel used on a daily basis, hourly heat input, daily hours of operation, information on startups, shutdowns and malfunctions, including time periods during which sulfur dioxide and nitrogen oxide controls are bypassed or shutdown, etc. It is suggested that the manner in which this information is used to demonstrate compliance with the plantwide limits be specified in the draft Title V air quality permit.

Response: DENR agrees that DENR and the public should be able to determine compliance with the plantwide limits at all times. The best method to demonstrate continuous compliance is a CEM system. The CEM system is required to operate at all times, including during periods of startup, shutdown, malfunction or emergency conditions. Monitoring downtime is allowed for system breakdown, repairs, calibration checks, zero and span adjustments, and when the boiler is not operational. See permit condition 8.4 of draft Title V air quality permit. To ensure the CEM system is operating properly, DENR required Otter Tail Power Company to meet the performance specifications in 40 CFR Part 60, Appendix B; and the quality assurance requirements in 40 CFR Part 60, Appendix F, or the performance specifications in 40 CFR Part 75, Appendix A and the quality assurance requirements in 40 CFR Part 75, Appendix B. See permit condition 8.5 of draft Title V air quality permit.

In the Statement of Basis for the draft Title V air quality permit at page 14, it states that “Unit #1 and #13 will be required to install, maintain, and operate continuous emission monitoring systems for sulfur dioxide and nitrogen oxide by the requirements under the Acid Rain Program...” Chapter 10.0 of the draft Title V air quality permit specifies that Unit #1 shall meet the Acid Rain requirements under the Acid Rain program. The missing CEMs data for both sulfur dioxide and nitrogen oxide is specified in 40 CFR Part 75, Subpart D and E. The commenter is correct that it is not clear what methods shall be used to account for missing CEM system data. Therefore, DENR will specify in permit condition 8.4 that missing CEMs data shall be based on the methods described under the Acid Rain Program. How data is collected and used to determine sulfur dioxide and nitrogen oxide emissions for missing CEMs data is specified in 40 CFR Part 75, Subpart D and E.

With regard to the commenters concern about the collection of data when the controls are bypassed, permit condition 1.1 of the draft Title V air quality permit requires Otter Tail Power Company to operate each unit as specified in its application unless otherwise specified by the draft Title V air quality permit. Otter Tail Power Company specified in the PSD application that sulfur dioxide and nitrogen oxide emissions from Unit #13 will be controlled by a wet flue gas desulfurization system and selective catalytic reduction system, respectively. Table 1-1 specifies these control devices for the appropriate unit. Table 1-1 specifies that Unit #1 exhaust gases will be passed through the wet flue gas desulfurization

system as outlined in the permit. Permit condition 9.6 of the draft Title V air quality permit allows the exhaust gases from Unit #1 to bypass the wet flue gas desulfurization system when the wet flue gas desulfurization system is not in operation due to malfunctions, repairs, or preventative maintenance, or to conduct emissions testing to demonstrate compliance with the emission limits specific to Unit #13. When this occurs, the sulfur dioxide emissions from Unit #1 will be measured by the continuous emission monitoring system on Unit #1. Unit #13 is required to operate at all times with the control equipment specified in Table 1-1. There are no conditions in the permit that allow Unit #13 to bypass the control equipment.

2. One commenter is concerned about the practical enforceability of the draft Title V air quality permit for those units not using a Continuous Emission Monitoring (CEM) system to demonstrate compliance with the plantwide caps for nitrogen oxide. The commenter suggests shorter term limits on these units or apportionment of some part of the plantwide emission cap to these units and reduction of the cap accordingly for Unit #1 and #13. The commenter suggests that testing must be more frequent and must be required for each fuel type burned in a particular unit, and that appropriate recordkeeping and reporting for each fuel type should be required. The commenter also suggests that the nitrogen oxide stack performance test method and results for each unit should be specified. The commenter suggested that more detail is necessary in the permit as to whether Otter Tail Power Company should determine emissions on a daily, weekly or monthly basis.

Response: DENR disagrees that the draft Title V air quality permit needs shorter term limits on the units not equipped with a CEM system, and disagrees that the permit is not practically enforceable. DENR established short term nitrogen oxide emission limits in permit condition 9.5 of the draft Title V air quality permit. The short term limits are based on pounds per million Btu of heat input, pounds per horsepower-hour, grams per horsepower-hour, or grams per kilowatt. DENR decided not to apportion some of the plantwide limit to the units without a CEM system in order to provide Otter Tail Power Company some flexibility in complying with the plantwide limit. Permit condition 5.5 of the draft Title V air quality permit requires Otter Tail Power Company to calculate nitrogen oxide emissions on a monthly basis; permit condition 9.6 specifies short term emission limits that demonstrate that the plantwide limit will not be exceeded; permit condition 9.5 specifies that nitrogen oxide emissions will be based on stack performance tests and the amount of fuel burned in each unit; permit condition 7.8 requires an initial performance test to demonstrate compliance with the short term limits and to establish the emission rate for calculating monthly emissions; and permit condition 5.9 requires quarterly reports that demonstrate compliance with the plantwide limit for each month in the quarter. DENR believes there is sufficient information available to the public for ensuring Otter Tail Power Company is in compliance with the plantwide limit.

The units that do not use a CEM system to demonstrate compliance do not typically often operate throughout the year. For example, Unit #2, #3, and #4 operated less than 100 hours on average per year combined in 2003 and 2004. Unit #14, #15, #25, and #33 are similar units. In addition, Units #14, #15, #25, and #33 are limited to 500 hours per 12-month rolling. Permit condition 5.7 of the draft PSD air quality permit. Therefore, DENR does not

believe it is necessary to stack test more than once during the term of this permit and, as such, only required an initial stack performance test. Permit condition 7.8 of the draft Title V air quality permit. However, if the number of hours increases or if DENR believes additional testing is necessary to demonstrate compliance with the plantwide limit, permit condition 7.1 of the draft Title V air quality permit allows DENR to request additional testing.

DENR does not believe that separate testing while the unit is burning distillate oil and biodiesel fuel is warranted based on test results for distillate oil and biodiesel fuel on other fuel burning units. In 1997, South Dakota Soybean Processors tested one of its boilers while burning distillate oil and the test results indicated a nitrogen oxide emission rate of 10.9 pounds per hour. In 2005, South Dakota Soybean Processors tested both of its boilers while burning biodiesel fuel and the test results indicted a combined nitrogen oxide emission rate of 10.7 pounds per hour.

Specifying which test method, and how the results of the test should be reported, is not necessary for demonstrating compliance with the plantwide limit. DENR allows any test method promulgated by EPA to be used to demonstrate compliance. Permit condition 7.2 of the draft Title V air quality permit. How the test results are reported is dictated by the units specified in the short term limit for the appropriate unit and the documentation required in the quarterly report. DENR identified that supporting documentation must be submitted in the quarterly report. This allows DENR the opportunity to verify the acceptability of the methods Otter Tail Power Company is using to determine nitrogen oxide emissions, to ensure compliance with the plantwide limit, and to provide information to the public regarding how compliance is achieved.

DENR did require Otter Tail Power Company to calculate monthly plantwide limits in permit condition 5.5 of the draft Title V air quality permit. DENR will modify this permit condition to require supporting documentation be provided in the monthly records so that its inspectors are able to review the data and readily determine that Otter Tail Power Company calculated plantwide emissions correctly.

The draft Title V air quality permit requires a plantwide limit for nitrogen oxide, provides a short term limit for those units not equipped with a CEM system, requires the appropriate testing, recordkeeping, and reporting for the number of hours these units operate per year, and is practically enforceable.

3. One commenter is concerned whether the draft Title V air quality permit for those units that are not using a Continuous Emission Monitoring (CEM) system to demonstrate compliance with the plantwide caps for sulfur dioxide is practically enforceable. The commenter suggests that more than one time grab samples to demonstrate compliance with sulfur limits is warranted. The commenter suggests that the details for determining sulfur dioxide emission be more specific.

Response: Permit condition 7.9 of the draft Title V air quality permit required an initial grab sample of distillate oil and biodiesel after the initial startup of Unit #13, to ensure the

distillate oil and biodiesel on site at the time of initial startup is in compliance with the sulfur content limits in permit condition 9.3. An initial grab sample for the fuels burned in the units associated with Unit #13 is not required because compliance with the sulfur content is required on and after the initial startup of Unit #13. Once the sulfur content of the fuel on site is determined, permit condition 8.3 requires a fuel supplier's certification that verifies the distillate oil or biodiesel fuel provided for the appropriate unit meets the sulfur content limit for that unit. A fuel supplier's certification is a valid method for determining compliance with the sulfur content of the fuel. DENR agrees that the sulfur content used to calculate sulfur dioxide emissions should be based on the maximum sulfur content allowed for the applicable unit. Therefore, DENR will revise permit condition 9.2 of the draft Title V air quality permit by specifying that the sulfur content used to calculate sulfur dioxide emissions from the unit will be based on the maximum sulfur content allowed in permit condition 9.3.

Permit condition 5.5 of the draft Title V air quality permit requires Otter Tail Power Company to calculate sulfur dioxide emissions on a monthly basis and will be revised to provide supporting documentation; permit condition 9.3 specifies the maximum sulfur content for each fuel type; permit condition 9.2 will be revised to specify that the sulfur dioxide emissions will be based on the maximum sulfur content specified in permit condition 9.2; permit condition 8.3 requires a fuel supplier's certification that each load of fuel meets the sulfur content limit in permit condition 9.3; and permit condition 5.9 requires quarterly reports that demonstrate compliance with the plantwide limit for each month in the quarter. The draft Title V air quality permit requires a plantwide limit for sulfur dioxide, provides a short term limit (e.g., maximum sulfur content for each type of fuel), requires the appropriate testing, recordkeeping, and reporting, and is therefore, practically enforceable.

4. One commenter suggested that initial startup of Unit #13 should begin on and after the first day any fuel is combusted in Unit #13, or in any of the other units associated with Big Stone II.

Response: DENR disagrees that "initial startup" should occur when any fuel is burned in Unit #13 or when any unit associated with Unit #13 is operated. Condition 9.2 and 9.4 of the draft Title V air quality permit requires the 12-month rolling total for demonstrating compliance with the sulfur dioxide and nitrogen oxide plantwide emission limit to begin the first month of initial startup of Unit #13. Permit condition 5.7 specifies the initial startup of Unit #13 is the first day Unit #13 commences operation, which is the first day that Unit #13 is operated when firing pulverized coal. DENR used pulverized coal because that is the primary fuel and is the fuel that produces the greatest sulfur dioxide and nitrogen oxide emissions. DENR did not use the startup of the other units associated with Big Stone II to constitute initial startup of Unit #13 because a majority of sulfur dioxide and nitrogen oxide emissions are generated from Unit #13 while being fueled with coal.

5. One commenter suggested that conditions 9.2 and 9.4 of the draft Title V air quality permit were vague and should be clarified to make it clear that if Big Stone's rolling 12-month tally of sulfur dioxide or nitrogen oxide emissions ever exceeds the plantwide caps, then Big Stone must meet PSD requirement for those pollutants as though construction had not yet

commenced, and that a violation of a rolling monthly plantwide cap could be subject to a penalty of \$10,000 per day for each day of the month the source is in violation. The commenter believes that monthly reporting is necessary to allow DENR to take immediate action to require Otter Tail Power Company to obtain a PSD permit for the facility.

Response: Permit conditions 9.2 and 9.4 of the draft Title V air quality permit require a PSD review and a PSD permit if there is any relaxation in the Title V permit that increases applicable emissions greater than the sulfur dioxide or nitrogen oxide plantwide limit. An exceedance of a plantwide limit is a relaxation of the Title V permit condition which would require a PSD review and permit for that pollutant. DENR agrees to add language to each of these conditions that makes it clear that an exceedance of a plantwide limit will require a PSD review and a PSD permit for that pollutant.

Permit condition 5.5 of the draft Title V air quality permit requires Otter Tail Power Company to determine plantwide sulfur dioxide and nitrogen oxide emissions on a monthly basis. Permit condition 5.11 requires Otter Tail Power Company to report permit violations by no later than the first business day following the day a violation is discovered. Notification within 24 hours of discovering that a plantwide limit is exceeded is more stringent than monthly reporting. Therefore, DENR disagrees that monthly reporting is necessary.

Permit condition 1.4 of the draft Title V air quality permit specifies that each violation of a permit condition may subject the owner or operator to a state penalty of not more than \$10,000 per day per violation. This is a general condition to identify the maximum penalty for a violation. It is unrealistic to specify every violation scenario in this condition. DENR disagrees that every violation scenario should be spelled out in permit condition 1.4 of the permit.

6. One commenter suggested that Otter Tail Power Company and the state retain all records related to the plantwide limit for the life of Big Stone II. The commenter argues that this is the only way the state, EPA, and the public can have access to records disclosing whether Otter Tail Power Company is complying with the plantwide limit.

Response: Permit condition 5.1 of the draft Title V air quality permit requires Otter Tail Power Company to maintain all monitoring data, records, reports, and pertinent information specified by this permit for five years from the date of sample, measurement, report, or application. This permit condition is equivalent to 40 CFR § 70.6(3)(ii)(B), which defines the retention of records required of all Title V air quality permits.

IX. Qualitative Significance of Emission Reductions and Increases

1. One commenter states that DENR cannot allow Big Stone II to net out of PSD review without an analysis that the emission reductions at Big Stone I have the same qualitative significance for public health and welfare as the emission increases at Big Stone II. It is alleged that without such analysis, there are no assurances that this requirement for allowing

Otter Tail Power Company to net Big Stone II out of PSD review for sulfur dioxide and nitrogen oxide has been met.

Response: In accordance with 40 CFR § 52.21(b)(2)(i), a major modification means any physical change in, or change in the method of operation of, a major stationary source that would result in: 1) a significant emission increase of a New Source Review pollutant; and 2) a significant net emissions increase of that pollutant from the major stationary source. In accordance with 40 CFR § 52.21(b)(23), “significant” means, in reference to a net emissions increase or the potential of a source to emit NSR pollutants, at a rate of emissions greater than a specified amount. In accordance with 40 CFR § 52.21(b)(4), “potential to emit” means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limit of the capacity of the source to emit a pollutant, including air pollution control equipment and restrictions on hours of operations or the type or amount of material combusted, stored, or processed, is to be treated as part of its design if it is federally enforceable. In accordance with 40 CFR § 52.21(b)(5), a stationary source means any building, structure, facility or installation which emits or may emit a regulated New Source Review pollutant. In accordance with 40 CFR § 52.21(b)(6), a building, structure, facility, or installation means all of the pollutant emitting activities which belong to the same industrial group. Big Stone I and II belong to the same industrial group, are located on contiguous property, and are under the control of Otter Tail Power Company. Therefore, any operational limits that Otter Tail Power Company accepts on emissions from Big Stone I are counted in determining the potential to emit from Big Stone II. By accepting plantwide limits for the entire facility at or below the level currently emitted by Big Stone I, the potential to emit is less than the significant threshold under the PSD program.

Although there was no increase in emissions for sulfur dioxide and nitrogen oxide because of the plantwide limits, DENR did model the emissions from each facility and compare the results to the background monitoring data Otter Tail Power Company collected in 2002 to ensure the National Ambient Air Quality Standards for those pollutants would not be exceeded. The stack heights and volumetric flow rates for both Big Stone I and Big Stone II are similar. Therefore, the dispersion characteristics for both Big Stone I and Big Stone II will be similar. Table #1 compares the background ambient data plus modeling results to the National Ambient Air Quality Standards for sulfur dioxide and nitrogen oxide. Table #1 was derived from Table 10-21 of the original Statement of Basis for the original draft PSD air quality permit.

Table #1 – Sulfur Dioxide and Nitrogen Oxide Modeling Results

Pollutant	Big Stone II Project and Big Stone I Modeled Impact (ug/m³)	Monitored Background (ug/m³)	Total Impact (ug/m³)	NAAQS (ug/m³)	NAAQS Violation
SO₂ (3-hour)	228.05	26.70 ¹	255	1,300	No
SO₂ (24-hour)	113.29	10.70 ¹	122	365	No

Pollutant	Big Stone II Project and Big Stone I Modeled Impact (ug/m³)	Monitored Background (ug/m³)	Total Impact (ug/m³)	NAAQS (ug/m³)	NAAQS Violation
SO₂ (Annual)	8.59	2.70 ¹	11	80	No
NO_x (Annual)	52.44	9.60 ²	62	100	No

¹ – Maximum concentration from 2005 in parts per million converted to micrograms per cubic meter; and

² – Annual average from 2005 in parts per million converted to micrograms per cubic meter.

The modeling analysis demonstrated that the sulfur dioxide and nitrogen oxide emissions from Big Stone I and II will not cause a violation of the National Ambient Air Quality Standards.

X. Global Climate Change

1. One commenter asserted that the draft PSD air quality permit should address carbon dioxide or other greenhouse gas emissions because Big Stone II would contribute significantly to global warming. The commenter stated that many states are beginning to regulate climate change; the Supreme Court has ruled that EPA has the authority to regulate carbon dioxide; and Congress is actively considering regulating carbon emissions. The commenter requested that DENR place a reopener clause in the draft PSD air quality permit to put the applicant on clear notice that its carbon dioxide emissions will be regulated if authority to do so under the Clean Air Act is established by federal legislation. The commenter states that current state law and rules give DENR the authority to regulate carbon dioxide. If DENR does not deny the draft PSD air quality permit, the commenter recommends four ways in which the draft PSD air quality permit can address carbon dioxide emissions: 1) as a regulated pollutant that must not exceed emission limits corresponding to BACT; 2) as a collateral environmental impact to be weighed in the BACT analysis; 3) as part of the necessary Endangered Species Act consultation process; and 4) in the alternative, analysis under the Clean Air Act section 165.

Response: In accordance with 40 CFR § 52.21(b)(50), a “regulated NSR pollutant” means the following:

- (1) Any pollutant for which a National Ambient Air Quality Standard has been promulgated and any constituents or precursors for such pollutants identified by the Administrator (e.g., volatile organic compounds and NO_x are precursors for ozone);
- (2) Any pollutant that is subject to any standard promulgated under section 111 of the Clean Air Act (Act);
- (3) Any Class I or II substance subject to a standard promulgated under or established by Title VI of the Act; or
- (4) Any pollutant that otherwise is subject to regulation under the Act; except that any or all hazardous air pollutants either listed in section 112 of the Act or added to the list

pursuant to section 112(b)(2) of the Act, which have not been delisted pursuant to section 112(b)(3) of the Act, are not regulated NSR pollutants unless the listed hazardous air pollutant is also regulated as a constituent or precursor of a general pollutant listed under section 108 of the Act.

A National Ambient Air Quality Standard has not been promulgated for carbon dioxide and the Administrator of EPA has not identified carbon dioxide as a constituent or precursor for an air pollutant with a National Ambient Air Quality Standard. Carbon dioxide is not a regulated air pollutant for permitting purposes as it does not meet the criteria in section (1) above. In addition, no guidance is currently available from EPA to assess a source's carbon dioxide contribution to global warming.

The commenter argued that carbon dioxide is regulated through the landfill emission regulations at 40 CFR Part 60, Subpart Cc and WWW. The argument is premised on the fact that in the preamble to these regulations, EPA discusses that greenhouse gases such as carbon dioxide and methane, are regulated as a component of landfill gases. DENR reviewed 40 CFR Part 60, Subpart Cc and WWW and did not find carbon dioxide mentioned in these regulations. DENR then reviewed the preamble and found that carbon dioxide is discussed as a greenhouse gas that will increase under the standards proposed in those regulations, but that EPA deemed that acceptable because methane emissions would be reduced and methane contributes considerably more to climate change on a weight basis than carbon dioxide. The pollutants listed as regulated in the preamble are methane and nonmethane organic compounds, not carbon dioxide. See 56 Fed. Reg. 24468 (May 30, 1991). DENR disagrees that carbon dioxide is a regulated pollutant in 40 CFR Part 60, Subpart Cc and WWW or any standard promulgated under section 111 of the Act.

Carbon dioxide is not listed as a Class I or II substance under or established by Title VI of the Act and does not meet the criteria in section (3) above.

The commenter describes "any pollutant" that is regulated under the Act as a broad definition. The commenter identifies carbon dioxide as a regulated pollutant under section 821 of the Act which requires sources to monitor and report carbon dioxide emissions; under 40 CFR Part 75, which requires sources subject to the Acid Rain program to monitor and report carbon monoxide emissions; and EPA as having the authority to regulate carbon dioxide as a "pollutant" under the Act.

The carbon dioxide requirement in section 821 of the Act is an information gathering requirement and establishes that information gathered is to be available to the public. In Appendix A of EPA's "New Source Review Workshop Manual" dated October 1990, EPA defines regulated pollutants under the Act; carbon dioxide is not listed in the definition. A memorandum from John Sietz regarding "New Source Review (NSR) Program Transitional Guidance" dated March 11, 1991 identified the currently regulated pollutants under the Act, and again carbon dioxide is not listed. Carbon dioxide was rejected as a regulated pollutant in a claim that a BACT analysis for carbon dioxide was required. See PSD appeal Nos. 92-8 and 92-9, decided March 16, 1994, at 150-151.

The U.S. Supreme Court has identified carbon dioxide as an air pollutant that *may* be regulated by EPA, and EPA is in the process of addressing whether or not carbon dioxide endangers public health or welfare and if it therefore needs to be regulated. Some states have moved forward in promulgating regulations that address climate change issues, EPA and/or Congress have not.

This is consistent with EPA's interpretation of its current authority to regulate carbon dioxide emissions to address global climate issues. In EPA's Response to Public Comments on Draft Air Pollution Control PSD Permit to Construct issued in Deseret Power Electric Cooperative's Bonanza Power Plant permit application, issued by EPA Region VIII on August 30, 2007, EPA stated:

It is well established that "EPA lacks the authority to impose [PSD permit] limitations or other restrictions directly on the emission of unregulated pollutants. North County Resource Recovery Assoc., 2 EAD 229, 230 (EAB 1986). The Clean Air Act and EPA's regulations required PSD permits to contain emissions limitations for "each pollutant subject to regulation" under the Act. CAA § 165(a)(4); 40 CFR 52.21(b)(12). In defining those PSD permit requirements, EPA has historically interpreted the term "subject to regulation under the Act" to describe pollutants that are presently subject to a statutory or regulatory provision that requires actual control of emissions of that pollutant...

In defining a "regulated NSR pollutant," EPA identified such pollutants by referencing pollutants regulated in three principal program areas – NAAQS pollutants, pollutants subject to a section 111 NSPS, and class I or II substance under title VI of the Act – as well as any pollutant "that otherwise is subject to regulation under the Act". 40 CFR 52.21(b)(50)(i)-(iv). As used in this provision, EPA continues to interpret the phrase "subject to regulation under the Act" to refer to pollutants that are presently subject to a statutory or regulatory provision that requires actual control of emissions of that pollutant. Because EPA has not established a NAAQS or NSPS for CO₂, classified CO₂ as a title VI substance, or otherwise regulated CO₂ under any other provision of the Act, CO₂ is not a "regulated NSR pollutant" as defined by EPA regulations.

DENR disagrees that carbon dioxide meets the definition of a "regulated NSR pollutant", and is not requiring Otter Tail Power Company to address carbon dioxide emissions in the draft PSD air quality permit. If EPA and/or Congress adopt carbon dioxide regulations in the future that are applicable to Big Stone II or even Big Stone I, the Title V air quality permit program has reopener clauses and DENR will address those requirements in the Title V air quality permit.

2. One commenter asserted that the draft PSD air quality permit describes significant amounts of carbon emissions from the facility and we should work to reduce climate change rather than permitting facilities like Big Stone II.

Response: The same response listed in subsection (1) above is applicable to this comment.

Further, the South Dakota Public Utilities Commission (PUC) in issuing a siting permit for the proposed Big Stone II facility, specifically found that carbon dioxide emissions are not currently regulated. It further found that Big Stone II would increase carbon dioxide emissions, but that the small amount of those emissions would not pose a threat of serious injury to the environment. This decision was upheld by the South Dakota Supreme Court. The Supreme Court held that the PUC followed existing legal guidelines in approving the permit, and that its findings, including those regarding carbon dioxide emissions were not erroneous. *In the Matter of Otter Tail Power Company*, 2008 SD 5, ¶¶ 1, 35.

The PUC decision was partially based on a comparison of the carbon dioxide emissions from Big Stone II to the projected 2010 U.S. anthropogenic and global carbon dioxide emissions estimated by an Energy Information Administration report. The comparison estimated that Big Stone II would emit approximately 0.07% of the total projected U.S. anthropogenic sources and 0.014% of the total projected global anthropogenic carbon dioxide emissions. *Ibid*, ¶ 33.

As stated in subsection (1) above, EPA is in the process of addressing whether or not carbon dioxide endangers public health or welfare and needs to be regulated. DENR will not regulate carbon dioxide until EPA and/or Congress establishes national carbon dioxide requirements.

XI. BACT Analysis Including IGCC

1. One commenter alleges that Integrated Gasification Combined Cycle (IGCC) is an available, demonstrated cleaner coal combustion technology with significant emission reduction benefits. The commenter states that there are numerous benefits to IGCC, including lower emissions of criteria and hazardous air pollutants, the opportunity for capturing greenhouse gases and a general increase in efficiency over other coal burning technologies.

Another commenter alleges that IGCC current performance worldwide demonstrates the emissions are no lower than those for the Big Stone II project, still have limited reliability, are not demonstrated for base load use, are fundamentally different from conventional coal technology, and would redefine the source.

Response: As defined in 40 CFR § 52.21(b)(12), BACT means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act, which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis taking into account energy, environmental, and economic impacts and other costs, determines is achievable through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques, for control of such pollutant. In no event can the application of BACT result in emissions of any pollutant which would exceed the emissions allowed by any applicable

standard under 40 CFR parts 60 and 61. If it is determined that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such a standard is, to the degree possible, required to set forth the emissions reduction achievable by implementation of the design, equipment, work practice or operation, and is required to provide for compliance by means which achieve equivalent results.

As noted in the original Statement of Basis, the PSD rules do not mandate or require that a major source or major modification be redesigned in reviewing the available methods, systems, and techniques, (including innovative fuel combustion techniques). In this analysis of the Big Stone II proposed project, the proposed source or major modification is the super critical pulverized coal-fired boiler. This source pulverizes the coal and combusts the coal as fuel in a boiler. The boiler produces steam that turns a turbine connected to an electric generator that generates electricity.

The suggested IGCC system would gasify the coal into a syngas. The syngas is transferred to an acid gas recovery system to clean the syngas. The cleaned syngas is then burned in a combined cycle combustion turbine system connected to an electric generator(s) that generates electricity.

The turbines and electric generators of a super critical pulverized coal-fired boiler are not designed to be interchangeable with those of an IGCC process. Besides the use of coal as a feed stock, there are few similarities between the super critical pulverized coal-fired boiler and the IGCC system. Therefore, an IGCC system is not an available method, system, or technique that may be applied directly to a super critical pulverized coal-fired boiler system. In this instance, Otter Tail Power Company would have to redesign the Big Stone II power plant into a new different major source or major modification to consider the IGCC system. This would constitute a redefinition of the source.

This interpretation is consistent with EPA's draft 1990 New Source Review Workshop Manual. The 1990 manual, which is an accepted source for direction on BACT analysis, notes that the BACT requirements are not a means to redefine the source when considering available control alternatives. As noted in EPA's guidance, EPA would not require a source to consider a natural gas combustion turbine instead of a coal-fired boiler in the BACT analysis. The IGCC system operates more like a combustion turbine than a coal-fired boiler.

One commenter noted that the Department of Energy's National Energy Technology Laboratory maintains a database that identifies gasification systems. This database contains 167 gasification systems in operation, startup, development, under construction, etc. These gasification systems are used to produce power, chemicals or gaseous fuels. The database lists 32 gasification systems that are in operation, startup, development, under construction, etc. that will produce power (electricity) throughout the world.

Currently, there are only two gasification systems in the world that are in operation, produce power and have a generating capacity greater than 500 megawatts. Both of these gasification systems are located in Italy and neither uses coal as a feed stock.

There are two gasification systems in the United States that are in operation, produce power and have a generating capacity greater than 200 megawatts. Both of these gasification systems were supported in part by the Department of Energy as demonstration projects. These projects were fired originally on bituminous coals and blends of bituminous coals, with other fuels such as petroleum coke. DENR was unable to determine if these projects tried to burn subbituminous coal.

Both commenters noted there have been several recent proposed IGCC projects that are in the process of obtaining permits for construction. However, several of those projects have been delayed or cancelled due to costs, uncertainty of greenhouse regulations, appeals, etc.

DENR agrees that IGCC is a promising technology that is available for use to produce electricity. However, DENR disagrees that IGCC has been proven to be readily and commercially available to produce approximately 600 megawatts of base load electricity by burning subbituminous coal.

XII. BACT Analysis for PM10

1. Two commenters were concerned that the BACT limit for PM10 does not reflect the maximum degree of emission reductions that can be achieved. It was requested that DENR impose a total PM10 (filterable and condensable) BACT emission limit of 0.018 pounds per million Btus for Unit #13. In addition, an opacity BACT limit was requested.

Response: As defined in 40 CFR § 52.21(b)(12), BACT means an emissions limit (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which is determined on a case-by-case basis and taking into account energy, environmental, and economic impacts and other costs, to be achievable for the source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques, for control of the pollutant. Application of BACT may not result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such a standard is required, to the degree possible, to set forth the emissions reduction achievable by implementation of the design, equipment, work practice or operation, and is required to provide for compliance by means which achieve equivalent results.

Each facility has its own design. Therefore, an understanding of the similarities and the processes of each permitted unit is necessary when comparing emission limits from different permits. The following is a summary of the facilities and units identified by the commenters as having PM10 BACT emission limits lower than that proposed in the draft permits:

- Public Service Company in Pueblo, Colorado – partially enclosed-type supercritical pulverized coal-fired boiler with a base load of 750 megawatts and fired with subbituminous coal (PM10 BACT limit of 0.012 (filterable) pounds per million Btu and 0.02 (filterable and condensable) pounds per million Btu);
- Rocky Mountain Power in Big Horn County, Montana – pulverized coal-fired boiler rated at 116 megawatts (PM10 BACT limit of 0.012 (filterable) pounds per million Btu and 0.024 (filterable and condensable) pounds per million Btu);
- Northampton Generating Station in Pennsylvania – circulating fluidized bed coal-fired boiler rated at approximately 150 megawatts (1,146 million Btus per hour) fired with anthracite and bituminous coal (PM10 BACT limit of 0.0088 pounds per million Btu);
- Plum Point Energy in Arkansas – pulverized coal-fired boiler rated at 800 megawatts fired with subbituminous coal (PM10 BACT limit of 0.018 (filterable and condensable) pounds per million Btu);
- Longview Power Plant in West Virginia – pulverized coal-fired boiler rated at 600 megawatts burning bituminous coal (PM10 BACT limit of 0.018 (filterable and condensable) pounds per million Btu); and
- Trimble County Generating Station in Kentucky – supercritical pulverized coal-fired boiler rated at 750 megawatts fired with bituminous coal or a blend of bituminous and subbituminous coal (PM10 BACT limit of 0.018 (filterable and condensable) pounds per million Btu).

Otter Tail Power Company is proposing a pulverized coal-fired boiler with a base load of 600 megawatts fired with subbituminous coal. The properties of the coal such as the ash content, moisture content, etc. affect the emission characteristics of the gas stream. In addition to differences in the coal itself, the design of the boiler and other units of the facility will also affect the emission characteristics of the gas stream. The number of differences between the systems one compares and how those differences affect the emission characteristics, affect determination of a BACT limit. Assuming that the lowest emission limit permitted at other facilities is achievable for every design and application is an invalid and an inappropriate approach to developing a BACT limit.

Otter Tail Power Company's application noted several coal-fired boiler determinations from EPA's RACT/BACT/LAER clearinghouse and the National Coal-Fired Utility Projects Spreadsheet. These determinations covered more than just subbituminous coal-fired boilers. DENR reviewed these determinations to determine the best control technologies available, such as baghouses, electrostatic precipitators, etc. The list of subbituminous boilers noted in the original Statement of Basis represents those boilers that have similar designs and burn similar coal proposed by Otter Tail Power Company.

DENR established two particulate limits in the draft PSD air quality permit as BACT for the coal-fired boiler. The first limit is for the filterable material and is established at 0.012 pounds per million Btu. As noted in the original Statement of Basis, 40 CFR Part 60, Appendix A, Method 202, the EPA test method used to determine condensable PM10, has the potential to overestimate the emissions of this pollutant. This is due to the measurement of “artifact” contributions of sulfur dioxide and ammonia that react in the testing apparatus (to create ammonia salts) to give false indications of additional condensable PM10. In addition, DENR has very little data to indicate the expected levels of condensable particulate emissions from burning subbituminous coals from the Powder River Basin. Due to these issues, DENR agreed with Otter Tail Power Company’s proposed filterable and condensable PM10 BACT emission limit of 0.03 pounds per million Btu, but DENR drafted the permit to require a more stringent PM10 limit (filterable and condensable) depending on the results of the initial performance test. The emission limit will be lowered to the average of the three tests (nine test runs) plus two standard deviations, or 0.018 pounds per million Btus, whichever is greater; but in no case shall the limit be greater than 0.03 pounds per million Btus (filterable and condensable).

DENR believes the PM10 BACT limit for filterable and condensable emissions is a reasonable approach based on the uncertainty of the testing and data available during the review.

One commenter identified Utah as recently issuing two permits for coal-fired power plants to be equipped with a fabric filter baghouse with a 10% opacity limit. DENR agrees it has the authority to establish an opacity limit in applying BACT. However, establishing an opacity limit is at the reasonable discretion of the permitting authority based on its case-by-case analysis of the facility. See *Alabama Power Co. v. Costle*, 636 F.2d 323 (1979), 407-409. DENR believes the PM10 BACT emission limits, testing, etc. proposed in its draft permits are adequate to protect the National Ambient Air Quality Standards and PSD increments, and therefore it did not include an opacity limit in the draft PSD air quality permit.

2. One commenter recommends that the draft PSD air quality permit establish a limit that would restrict the 24-hour emission rate for PM10 at 1,508 pounds per hour from Unit #1 (Big Stone I) since that source triggers the minor source baseline date for PM10 and consumes 29.98 micrograms per cubic meter of the 30 micrograms per cubic meter PM10 24-hour increment under the PSD program.

Response: Otter Tail Power Company modeled the PM10 emission rates for existing units from Big Stone I and the proposed units for Big Stone II to demonstrate compliance with the National Ambient Air Quality Standards. The PM10 emission rates used in the model for the existing units from Big Stone I were adopted in the draft Title V air quality permit for Otter Tail Power Company’s Big Stone facility under permit condition 6.5. Otter Tail Power Company relied on these emission rates to demonstrate the Big Stone II project would not cause an exceedance of the National Ambient Air Quality Standards for PM10.

In Table 6-3 of the draft Title V air quality permit, the PM10 emission limit for Unit #1 is 0.26 pounds per million Btu heat input (filterable) with compliance based on EPA approved stack performance testing methods established in 40 CFR Part 60, Appendix A and using the average of three one-hour tests. The PM10 emission limit is effective on and after the startup of Unit #13, which is the Super-critical pulverized coal-fired boiler.

Permit condition 1.1 of the draft Title V air quality permit limits the maximum heat input to Unit #1 at 5,609 million Btus per hour. To determine the PM10 emission limit in the draft Title V air quality permit in pounds per hour for the purpose of comparing the commenters' emission rate of 1,508 pounds per hour, staff multiplied the PM10 emission limit in permit condition 6.5 by 5,609 million Btus per hour. The result is a PM10 emission limit for Unit #1 of 1,458 pounds per hour.

The proposed PM10 emission limit for Unit #1 is more restrictive than the PM10 emission limit requested in the comment. The proposed PM10 emission limit of 0.26 pounds per million Btus heat input in the draft Title V air quality permit will remain unchanged.

XIII. BACT Analysis for Sulfuric Acid Mist

1. Two commenters believe the established BACT limit for sulfuric acid mist in the draft PSD air quality permit does not represent BACT. The two commenters suggested that the sulfuric acid emission limit should be lower, such as that at the Sevier power plant (0.0024 pounds per million Btus), MidAmerican Energies Council Bluffs Unit 4 (0.0042 pounds per million Btus), Hastings Utilities in Nebraska (0.0004 pounds per million Btus) or Public Service Company in Colorado (0.0042 pounds per million Btus). In addition, one of the commenters recommended DENR review additional proposed and final permits since the initial draft PSD air quality permit was proposed in 2006.

Response: Each facility has its own design and an understanding of the similarities and the processes of each permitted unit needs to be understood when comparing emission limits from different permits. The properties of the coal being burned, the design of the boiler, etc. all affect the emission characteristics of the gas stream. A BACT limit is affected by the many differences that exist between the systems one compares, and how those differences affect the emission characteristics. Therefore, assuming the lowest emission limit permitted at another facility is achievable for every design and application is invalid and an inappropriate approach to developing a BACT limit.

The Sevier power plant in Utah is a 270 megawatt fluidized bed coal-fired boiler. The MidAmerican Energies power plant in Iowa proposes to use a supercritical pulverized coal-fired boiler. The Hasting Utilities power plant in Nebraska is a 220 megawatt pulverized coal dry-bottom boiler combusting subbituminous coal. The Public Service Company power plant in Colorado is a 750 megawatt supercritical pulverized coal-fired boiler combusting subbituminous coal.

Even though it is a smaller unit, DENR reviewed the Hastings Utilities power plant permit and could not find the BACT limit of 0.0004 pounds per million Btus for sulfuric acid mist cited by one of the commenters. The sulfuric acid mist limit in the permit was 0.80 pounds per hour and, according to the fact sheet, sulfuric acid mist emissions did not exceed the significant threshold and it was not subject to a BACT analysis. See Fact Sheet, Whelan Energy Center, 3.

DENR reviewed the use of a wet electrostatic precipitator in its top down BACT analysis which one of the commenters believed was necessary and determined that it was cost prohibitive at \$147,200 per ton. See original Statement of Basis, 24.

Otter Tail Power Company's proposal is a 600 megawatt supercritical pulverized coal-fired boiler. The Public Service Company power plant is similar in size and boiler type as that proposed for Big Stone II; it has a sulfuric acid mist BACT emission limit of 0.0042 pounds per million Btu. The BACT emission limit range DENR found in its original review of the Otter Tail Power Company's application ranged from 0.0042 to 0.0064 pounds per million Btu. DENR also reviewed the BACT emission limits for sulfuric acid mist from other power plants permitted in 2005 to 2007. For units similar in size to Big Stone II, the sulfuric acid mist BACT emission limit ranged from 0.0037 to 0.006 pounds per million Btus.

DENR agreed with the top down BACT analysis conducted by Otter Tail Power Company which resulted in a baghouse and wet flue gas desulfurization control system for sulfuric acid mist. DENR believes the BACT emission limit of 0.005 pounds of sulfuric acid mist per million Btu is within the range being established at other power plants and is acceptable. DENR does not recommend any changes.

XIV. Enforceable BACT Limits

1. One commenter stated that the BACT emission limits must be enforceable by including provisions to ensure enforceability. The commenter argues that all of the emission limits must be in pounds per hour, in addition to pounds per million, Btus to be consistent with what is modeled to show compliance with the National Ambient Air Quality Standards and PSD increments. The commenter further argues that the averaging time for demonstrating compliance must be consistent with the averaging time of the short term National Ambient Air Quality Standards and PSD increments, and that the permit must specify appropriate compliance methods and record keeping requirements to demonstrate compliance.

Response: DENR agrees that the BACT emission limits must be consistent with what is modeled to show compliance with the National Ambient Air Quality Standards and PSD increments. Therefore, DENR is proposing to revise the draft PSD air quality permit to ensure the modeled emission rate for each pollutant can be identified in the permit. Unit #13 already has a pounds per hour emission limit and pounds per million Btus for PM10 and carbon monoxide identified in the permit. The PM10 BACT limit for the remaining units is not readily identified in the permit. In Table 4-1 of the draft PSD air quality permit, DENR will add a pound per hour BACT emission limit for PM10 that is equivalent to the emission

rate used in the models. The remaining pollutants (e.g., volatile organic compounds, sulfuric acid mist, and fluorides) were not modeled. The BACT emission limit was identified as pounds per million Btus.

On demonstrating compliance with the averaging time for the short term National Ambient Air Quality Standards and PSD increments, the commenter requested a 24-hour averaging time for the PM10 limit, an 8-hour average for carbon monoxide, and an 8-hour average for the volatile organic compound limits. The draft PSD air quality permit specifies that compliance with the BACT limits for PM10 will be based on the hourly average of three one-hour stack tests. See Table 4-1, footnote 1 of the draft PSD air quality permit. An initial stack test is required on each unit to demonstrate compliance with the BACT PM10 emission limit. See permit condition 6.7, 6.8, and 6.9. Since Unit #13 is the major emitter of PM10 emissions, two additional stack tests are required. The second test is required within 180 days of the initial test and the third test within 180 days of the second test. Additional testing on the other units is not warranted based on the hours of operation and amount of PM10 emissions from these units. However, additional testing may occur if the initial stack test or inspections warrant such action.

The draft PSD air quality permit specifies that compliance with the BACT limits for carbon monoxide will be based on the hourly average of three one-hour stack tests for all of the units that combust fuel except Unit #13. Compliance for Unit #13 will be based on a 30 day rolling average. See Table 4-2, footnotes 1 and 2 of the draft PSD air quality permit. Unit #13 will have a continuous emission monitoring system installed and operational on the startup of Unit #13. See permit condition 8.1 of the draft PSD air quality permit. An initial stack test is required on each unit to demonstrate compliance with the BACT carbon monoxide emission limit. See permit conditions 6.7 and 6.8. Additional testing may occur if the initial stack test or inspections warrant such action.

The draft PSD air quality permit specifies that compliance with the BACT limits for volatile organic compounds will be based on the hourly average of three one-hour stack tests for all of the units that combust fuel. See Table 4-3, footnote 1 of the draft PSD air quality permit. An initial stack test is required on each unit to demonstrate compliance with the BACT volatile organic compound emission limit. See permit conditions 6.7 and 6.8. Additional testing may occur if the initial stack test or inspections warrant such action.

The performance tests are required to meet the EPA approved stack testing methods in 40 CFR Part 60, Appendix A; 40 CFR Part 63, Appendix A; and 40 CFR Part 51, Appendix M, which are adopted by reference in ARSD 74:26:11:01. See permit condition 6.2 of the draft PSD air quality permit. The continuous emission monitoring system is required to meet the performance specifications in 40 CFR Part 60, Appendix B and the quality assurance requirements in 40 CFR Part 60, Appendix F; or the performance specifications in 40 CFR Part 75, Appendix A and the quality assurance requirements in 40 CFR Part 75, Appendix B. See permit condition 8.2 of the draft PSD air quality permit. The testing schedule and testing methods are specified in the permit. DENR believes the frequency of the testing will demonstrate continuous compliance of the each BACT limit.

Once DENR issues the Title V air quality permit for the operations covered under the draft PSD air quality permit, compliance assurance and periodic compliance monitoring will be included to determine ranges in which the equipment can operate and demonstrate continuous compliance. The time period between the construction permit and operating permit is necessary for Otter Tail Power Company to establish those ranges.

2. Three commenters recommended that Otter Tail Power Company be required to install, operate, calibrate, and maintain a particulate matter continuous emission monitoring system to demonstrate continuous compliance with the BACT PM10 emission limit for Unit #13. One commenter argues that BACT is to be met on a continual basis and thus compliance must be demonstrated on continual basis.

Response: One commenter mentioned that the recently revised federal New Source Performance Standard under 40 CFR Part 60 Subpart Db – Standards of Performance for Electric Utility Steam Generating Units for which construction is commenced after September 18, 1978 gives the operator a choice of installing, operating, calibrating and maintaining a continuous emission monitoring system or a continuous parametric monitoring system to continuously monitor particulate matter emissions. Otter Tail Power Company is applicable to this new source performance standard. Permit condition 5.1 of the draft PSD air quality permit requires Otter Tail Power Company to meet all of the applicable requirements in this new source performance standard.

The federal new source performance standard allows the use of a continuous emission monitoring system or a continuous parametric monitoring system to demonstrate compliance. EPA has determined that both methods are acceptable. DENR will allow Otter Tail Power Company to choose which method of continuous monitoring it wants to use to comply with the draft PSD air quality permit.

3. One commenter stated that at a minimum the draft PSD air quality permit should specify how ongoing compliance with the PM/PM10 limit would be monitored. The commenter recommended that DENR require Otter Tail Power Company to perform annual stack tests for condensable PM emissions, to be used in conjunction with continuous filterable PM emission monitoring to demonstrate compliance with total PM/PM10 BACT limits.

Response: DENR agreed that more than one stack performance test is required of Unit #13, and in permit condition 6.7 of the draft PSD air quality permit, Otter Tail Power Company is required to conduct an initial stack performance test on Unit #13 within 180 days after initial startup of Unit #13. In addition, two additional stack tests are required to be conducted on Unit #13 within one year of the initial stack performance test conducted on Unit #13.

4. One commenter asked what analysis led DENR to the conclusion that the use of a baghouse or electrostatic precipitator is inappropriate to control particulate matter emissions at Big Stone II? How effective are the control measures listed in the Natural Events Action Plan for Rapid City in comparison with a baghouse or electrostatic precipitator?

Response: DENR considered a baghouse or electrostatic precipitator appropriate methods to control particulate matter emissions from the proposed Big Stone II operations with the exceptions of the generator, fire pump, and fugitive emission sources. The high temperatures in the exhaust gas streams from these sources make the use of a baghouse or an electrostatic precipitator inappropriate and/or ineffective for the fire pump and generators. In addition, requiring the enclosure of fugitive sources, such as paved and unpaved roads, stock piles, etc., and the routing of emissions from these fugitive sources to a baghouse or an electrostatic precipitator is inappropriate and ineffective.

The Natural Events Action Plan for Rapid City was designed to minimize dust emissions from fugitive dust sources such as paved roads, unpaved roads, stock piles, etc. This plan has been successful in helping the Rapid City area return to compliance with the National Ambient Air Quality Standard for particulate matter 10 microns in diameter or less. The Rapid City attainment designation was published in the Federal Register notice dated March 6, 2006, and effective April 5, 2006. Therefore, DENR is confident these methods are able to minimize fugitive dust emissions.

XV. Startup Shutdown and Malfunctions

1. One commenter stated that the draft PSD air quality permit must ensure that BACT emission limits and modeling emission limits are met at all times. Thus, it is contended that the provisions in permit condition 6.3 that require the stack test to be conducted during representative operation, and that startup, shutdown and malfunction is not representative of operation, must be deleted.

Response: As noted in the Statement of Basis, performance tests to demonstrate compliance with an emission standard that are conducted during startup, shutdown or malfunctions are not representative of operation. For example, the startup and shutdown process for some equipment does not occur over a long enough period of time to complete a valid performance test. Other problems, such as the cost, technological issues, etc., also occur when trying to recreate a malfunction to attempt to conduct a performance test. In addition, it is not prudent to require a source to replicate a malfunction to conduct a performance test.

As noted in ARSD 74:36:11:01, all stack performance tests must be conducted in accordance with the applicable method specified in 40 CFR § 60.17; Part 60, Appendix A; 40 CFR § 63.14; Part 63 Appendix A; and Part 51, Appendix M. These performance methods do not specify the conditions at which the facility must operate. However, the facility parameters at which these performance tests should be conducted are listed under 40 CFR § 60.8(c) and 40 CFR § 63.7(e). These regulations require that performance testing be conducted during representative operations, and that startup, shutdown, and malfunctions are not considered representative operations. This ensures that performance tests are conducted while a unit is operating in a mode that is representative of typical operations.

A continuous emission monitoring system may be used to determine compliance with emission limits during startup, shutdown, or malfunctions. The operation of a continuous monitor is not considered equivalent to the conduct of a performance test and does not fall within the requirement of permit condition of 6.8. However, a continuous emission monitoring system has to be certified by the conduct of a performance test. Performance tests are required to be conducted during representative operations, which exclude startup, shutdown and malfunctions. Such a performance test is within the requirement of permit condition 6.8.

EPA's stack testing rules specify that stack tests shall be conducted during representative operations and that startup, shutdown, and malfunctions are not considered representative operations. DENR disagrees with removing the provisions in permit condition 6.3 that require the stack test to be conducted during representative operation, and that startup, shutdown and malfunction is not representative of operation.

2. One commenter states that permit condition 4.8 in the draft PSD air quality permit is inconsistent with the Clean Air Act and must be deleted. The commenter alleges that since permit condition 4.8 does not specify any alternative emission limits that must be met by Big Stone II during startup or shutdown, the Big Stone II emission units would have to be modeled at uncontrolled potential emission rates and there is no demonstration that Big Stone II would not cause an exceedance of the National Ambient Air Quality Standards or PSD increments under the requirements in permit condition 4.8.

Another commenter states that BACT emission limitations should apply at all times and that BACT limits may not be waived during periods of startup, shutdown, and malfunctions, unless DENR establishes a secondary emission limitations or work practice during these periods

Response: The Clean Air Act 302(k) identifies an emission limit and emission standard as a requirement, which limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis, including any requirement relating to the operation or maintenance of a source to assure continuous emission reduction, and any design, equipment, work practice or operational standard.

The PSD rules at 40 CFR § 52.21(b)(12) establishes that, if the permitting agency determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT.

DENR agrees that the BACT emission limits should apply at all times, including during startups, shutdowns, and malfunctions. However, DENR disagrees that a work practice standard may not be used as a BACT limit to cover startup, shutdowns, and malfunctions. As discussed in subsection (1) above, a performance test conducted during startup, shutdown,

and malfunctions cannot be used to demonstrate compliance during startup, shutdowns, or malfunctions. Therefore, an alternative method or standard needs to be used to demonstrate compliance during these periods. The intention of permit condition 4.8 was to identify a compliance method that could be used during startup, shutdown, and malfunctions in addition to the performance tests conducted during normal operations, to ensure that the emission rates used in the modeling are maintained.

Therefore, DENR will revise permit conditions 4.1, 4.2, 4.3, 4.4, and 4.5 of the draft PSD air quality permit by removing the exceptions for startup, shutdown, or malfunctions and add a sentence that states compliance with the BACT emission limits during startup, shutdown, and malfunctions will be based on permit condition 4.8. In addition, permit condition 4.8 will be renamed to clarify that the startup, shutdown, and malfunction plan will be used to demonstrate compliance with the BACT limits since stack testing during these periods is not feasible. There will be one exception, and that is the carbon monoxide BACT limit for Unit #13. A continuous emission monitoring system will be installed on that unit and is capable of demonstrating compliance with the BACT carbon monoxide limit during startup, shutdown, and malfunctions.

3. One commenter states that units that use a continuous emission monitoring system should have an emission standard, and not a work practice standard, during startup, shutdown, and malfunction as noted in permit condition 4.8.

Response: The draft PSD permit requires continuous emission monitoring systems for opacity, carbon dioxide, sulfur dioxide, nitrogen dioxide, flue gas flow, carbon monoxide, and mercury. Due to the court rule on the clean air mercury rule as discussed in Section XXVI, the mercury continuous emission monitoring system is not required. Of the pollutants listed, only carbon monoxide was required to be reviewed under the PSD program. DENR agrees that a continuous emission monitoring system can obtain data covering both normal operations and periods of startup, shutdown, and malfunctions. Therefore, DENR agrees that the carbon monoxide emission standard may be used instead of a work practice standard during periods of startup, shutdown, and malfunctions. DENR stated in subsection (2) above, that the exception for startup, shutdown and malfunction will be removed from permit condition 4.2 of the draft PSD air quality permit.

XVI. Meteorological Data

1. One commenter stated the Huron airport meteorological data is not site specific because it is over 100 miles from Big Stone II, and it is therefore unacceptable for air dispersion modeling. The following reasons were cited by the commenter:
 - Huron airport is comprised of concrete runways, parking lots, passenger terminals, and other structures associated with air travel activities, which affect the boundary layer meteorology present at the airport;

- Landings, takeoffs, and idling of airplanes affect the site-specific conditions at the airport such that meteorological conditions are not representative of the area surrounding the Big Stone II facility;
- Airport conditions are typically reported once per hour, based on a single observation taken in the last ten minutes of each hour, and EPA requires sampling rates of 60 to 360 per hour to be used to calculate hourly-averaged meteorological data. Air dispersion modeling requires hour-averaged data, which represents the entire hour being modeled, not snapshots;
- Data collected at the Huron airport are not subject to the system accuracies required for meteorological data collected for air dispersion modeling. Low wind speeds down to 1.0 meter per second are usually associated with peak air quality impacts. EPA requires wind speed measurements be accurate to within plus or minus 0.2 meter per second, with a measurement resolution of 0.1 meter per second; and
- The lowest wind speed in the meteorological data files is 1.56 meters per second. Out of a possible 43,828 hours in a five-year modeling data set, there are zero hours with reported wind speeds equal to 1.03 meters per second. There were 2,518 such calm hours in the meteorological data files being excluded. Otter Tail Power Company should have used the ISCST3 non-default option, NOCALM or manually changed all hours with 0.0 meters per second winds to 1.0 meters per second.

Response: The commenter was concerned that the Huron airport is comprised of concrete runways, parking lots, passenger terminals, and other structures associated with air travel activities which affect the boundary layer of meteorology present at the airport. The commenter was also concerned with landings, takeoffs, and idling airplanes would affect the site specific conditions and not be representative of the area surrounding the Big Stone facility. This may be true of a big national airport but the Huron airport activities consist of 10 to 20 small and two commercial prop driving aircraft per day. The Huron National Weather Service site is located south of the main runway. Buildings and any other obstruction is approximately 1,200 feet from the station. The closest trees are about 250 feet south of the weather station on the property boundary. DENR does not believe that the activities at the airport impact the Huron National Weather Service site. Both the area around the airport and around the Big Stone facility is flat to slightly rolling surfaces.

The commenter was also concerned about the data being reported once per hour. Mr. Greg Harmon with the National Weather Service noted in an email that the Automated Surface Observing Systems (ASOS) program at Huron measures weather parameters every second and uses an array of mathematical algorithms to compile, quality check, and archive the data. Providing a complete weather observation involves combining up to the minute data from each weather parameter sensor to provide a “representative observation”. The processing time for each weather sensor varies, ranging from a processing interval of 30 minutes for sky conditions, to 10 minutes for precipitation, to 2 minutes for wind and 1 minute for atmospheric pressure. For example, ASOS continuously monitors wind speed and direction every second. One second measurements are used to update 5-second averages, which are in turn used to compute 2-minute averages. It is this 2-minute average (wind speed and direction) that is reported on the final transmitted observation.

The commenter was also concerned about quality assurance. The National Weather System electronics technicians maintain the ASOS systems across the Country according to well defined interagency maintenance policy standards. ASOS also performs its own continuous data quality checks and “flags” the observation to indicate data in question. These flags are picked up at the national ASOS Monitoring Center and the local National Weather Service Office. If warranted, the local National Weather System ASOS technician is dispatched to the site for system maintenance, or in many cases, these repairs can be made through a remote system maintenance interrogation.

ASOS and all other weather equipment used for aviation purposes are placed so as to avoid any type of human influence on the sensors. The standards for the siting of meteorological sensors at airports are contained in the federal publication “Federal Standard for Siting Meteorological Sensors at Airports” (FCM-S4-1994). The Huron ASOS siting is compliant with all standards in effect and not influenced by aircraft produced prop-wash or jet-wash.

XVII. Preconstruction Monitoring

1. One commenter indicated that DENR should have required Otter Tail Power Company to collect pre-construction meteorological data for use in the modeling. The commenter argues that Big Stone II should not be assessed for PSD increment compliance using non site-specific meteorological data collected with none of the quality assurances necessary for air modeling data. The commenter stated that pre-construction meteorological data for projects that trigger PSD review is already being required for coal-fired power plants. The commenter requested that DENR deny this PSD application because of this poor modeling practice and that a review of the application should not be resumed until Otter Tail Power Company has collected at least one year of site-specific meteorological data.

Response: After discussing pre monitoring requirements with DENR, Otter Tail Power Company located an air monitoring station approximately three and one half miles northwest of Big Stone I, within the modeled high impact area. The air monitoring station collected ambient air monitoring data for sulfur dioxide, nitrogen oxide, particulate matter equal to or less than 10 microns in diameter, and meteorological data. The meteorological data consisted of wind direction, wind speed, barometric pressure, and ambient temperature parameters. DENR required Otter Tail Power Company to collect only one year of data because only one year of data is required for background concentrations used in the National Ambient Air Quality Standards analysis. See 40 CFR § 52.21(m). Otter Tail Power Company began monitoring on October 18, 2001 and ended its monitoring on October 31, 2002.

The use of offsite meteorological data in lieu of site specific data is left up to the permitting authority. See the Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD), EPA-450/4-87-007, May 1987, 49. DENR agreed that the meteorological data from the Huron Airport National Weather Service monitoring site would be representative of the meteorological conditions at the Big Stone area. DENR agreed to

use this data because EPA's modeling guidance requires five years of consecutive meteorological data that adequately represents the site and may be site specific or from a nearby National Weather Service station. See 40 CFR Part 51, Appendix W, Section 8.3(b). National Weather Service meteorological data from airports is acceptable. See Meteorological Monitoring Guidance of Regulatory Modeling Applications, EPA-454/R-99-05, February 2000, 6-30.

DENR reviewed the data and determined that the Huron Airport National Weather Service data complies with the requirements in 40 CFR Part 51, Appendix W, is representative of the Big Stone area, and agreed to allow Otter Tail Power Company to use the data in the air quality analysis.

XVIII. Sulfur Dioxide Modeling

1. A commenter requested revised sulfur dioxide, nitrogen oxide, and carbon monoxide modeling results for the proposed changes to the PSD application. The commenter states that the original sulfur dioxide modeling analysis of the 3-hour average and 24-hour average is flawed because there are no emission limits required to be met by Big Stone I or II. The commenter states that without limits, the modeling should be based on uncontrolled emission rates to demonstrate compliance with the National Ambient Air Quality Standards based on 40 CFR § 52.21(k)(1).

Response: Otter Tail Power Company requested, and DENR granted, a plantwide sulfur dioxide and nitrogen oxide limit that enforceably restricts the operation and does not allow for an increase in sulfur dioxide and nitrogen oxide emissions. Since there is no increase in sulfur dioxide or nitrogen oxide emissions, PSD review is not triggered. PSD review is also therefore not triggered by the requirements in 40 CFR § 52.21(k), which requires a demonstration that any allowable emissions increase would not exceed the national ambient air quality standards or PSD increments for sulfur dioxide and nitrogen oxide. Therefore, Otter Tail Power Company was not required by the regulations, and DENR did not request, that Otter Tail Power Company model sulfur dioxide or nitrogen oxide emissions to demonstrate compliance with 40 CFR § 52.21(k).

Although there was no increase in emissions for sulfur dioxide and nitrogen oxide because of the plantwide limits, DENR did model the emissions from the existing and proposed operations and compared the results to the background monitoring data Otter Tail Power Company collected in 2002 to ensure the National Ambient Air Quality Standards for those pollutants would not be exceeded. Table #1 compares the background ambient data plus modeling results, to the National Ambient Air Quality Standards for sulfur dioxide and nitrogen oxide. Table #1 was derived from Table 10-21 of the original Statement of Basis for the draft PSD air quality permit.

Table #1 – Air Quality Analysis Comparison

Pollutant	Big Stone II Project and Big Stone I Modeled Impact (ug/m³)	Monitored Background (ug/m³)	Total Impact (ug/m³)	NAAQS (ug/m³)	NAAQS Violation
SO₂ (3-hour)	228.05	26.70 ¹	255	1,300	No
SO₂ (24-hour)	113.29	10.70 ¹	122	365	No
SO₂ (Annual)	8.59	2.70 ²	11	80	No
NOx (Annual)	52.44	9.60 ²	62	100	No

¹ – Maximum concentration from 2005 in parts per million converted to micrograms per cubic meter; and

² – Annual average from 2005 in parts per million converted to micrograms per cubic meter.

The modeling analysis demonstrated that the current levels of sulfur dioxide and nitrogen oxide emissions would not cause an exceedance of the National Ambient Air Quality Standards for sulfur dioxide and nitrogen oxide.

EPA established National Ambient Air Quality Standards for certain pollutants pursuant to section 109 of the Clean Air Act, and states are required to attain those standards. The state implementation plan is the means by which a state complies with the Clean Air Act requirement that states attain the National Ambient Air Quality Standards, pursuant to section 110(a) of the Clean Air Act. The National Ambient Air Quality Standards do not by themselves impose any obligation on sources. A source is not obligated to reduce emissions or take emission limits as a result of a standard until the State identifies a specific emission reduction measure needed for attainment and that measure is incorporated into the state implementation plan, which is then approved by EPA. See EPA's Appeal Board, Petition No.: II-2006-01, 13. South Dakota is attaining all of the National Ambient Air Quality Standards. As such, South Dakota has not been required to establish measures or limits to attain any of the National Ambient Air Quality Standards.

South Dakota has monitored for sulfur dioxide and nitrogen oxide in South Dakota to verify that South Dakota is attaining the National Ambient Air Quality Standards. As Table #2 indicates, South Dakota is meeting the National Ambient Air Quality Standards based on the state's monitoring network and the ambient monitoring conducted for the Big Stone Project. In addition, this monitoring demonstrates that the sulfur dioxide and nitrogen oxide emissions from all sources, including both non increment consuming and increment consuming sources, are below the allotted PSD increments for Class II areas. The Badlands and Wind Cave are considered Class I areas and have a lower increments that are not displayed in Table #2.

Table #2 – Statewide National Ambient Air Quality Standard Comparison

Site	SO ₂ ¹	SO ₂ ¹	SO ₂ ²	NO _x ²
	3-hour	24-hour	Annual	Annual
NAAQS ⁵	0.500	0.140	0.030	0.053
PSD Increment	0.192	0.034	0.008	0.013
Sioux Falls Hilltop	0.030	0.006	0.001	0.006
Big Stone Project	0.010	0.004	0.001	0.005
Badlands	0.004	0.003	0.001	0.001
Wind Cave	0.037	0.008	0.001	0.001

¹ – Maximum concentration from 2005, in parts per million;

² – Annual average from 2005, in parts per million; and

³ – “NAAQS” means National Ambient Air Quality Standard.

Based on the modeling results and the low sulfur dioxide and nitrogen oxide concentrations in South Dakota, DENR determined that it would not be necessary to include the sulfur dioxide and nitrogen oxide emission rates used in the model in the draft Title V air quality permit to ensure compliance with the National Ambient Air Quality Standards.

DENR did not revise the sulfur dioxide and nitrogen oxide modeling analysis after Otter Tail Power Company submitted revisions to the Big Stone II project because the proposed changes reduced the size of the plant from 630 megawatts to 600 megawatts. Since the proposed revision did not involve an increase in sulfur dioxide or nitrogen oxide emissions, a new modeling analysis was not conducted.

Otter Tail Power Company did revise its carbon monoxide modeling using the new carbon monoxide BACT emission limit of 0.15 pounds per million Btu and the results were included in addendums to the application. The modeling results demonstrated that the National Ambient Air Quality Standards for carbon monoxide are being met.

XIX. PM10 Modeling

1. One commenter stated that the modeling analysis for the 24-hour PM10 National Ambient Air Quality Standard is flawed because no enforceable emission limits reflective of the 24-hour average emission rates are used in the modeling analysis. The commenter compared the PM10 emission rates used in the model for Unit #2 associated with Big Stone I, to the particulate emission rate in Big Stone I's Title V air quality permit issued on August 8, 2001. Another asserted comparison was for Big Stone II, in which an hourly emission rate of 180 pounds per hour was modeled, but the permit does not include an hourly limit. To correct this problem, the commenter alleged that the 24-hour emission rates used in the model must be included in the permit as hourly emission limits.

Response: The PM10 emission rate used in the model should not match the particulate matter emission limit in Big Stone I's Title V air quality permit issued on August 8, 2001, because the limit in the Title V permit is for total suspended particulate matter.

In accordance with 40 CFR §52.21(k), an owner or operator of a proposed source or modification is required to demonstrate that its allowable emission increase from a proposed source or modification will not cause an exceedance of the National Ambient Air Quality Standards or applicable PSD increments. Although the PSD rule does not require that existing sources be modeled at their allowable emission rates, DENR did place the PM10 emission rates listed in the model for the Big Stone I operations in the draft Title V air quality permit. See Table 6-3, draft Title V air quality permit. DENR agrees that it should note that the some of the units for the PM10 emission limits are not in pounds per hour and that the maximum emission rate listed for every unit cannot be used with the PM10 emission limit to ensure that the hourly PM10 emission rate used in the model will not be exceeded. This applies to Unit #4 and #7 through #12, inclusive. Therefore, DENR agrees to revise Table 6-3 in the draft Title V air quality permit for those units by including the hourly limits used in the PM10 modeling. In addition, DENR will correct Unit #7 to represent that it is actually four separate existing units identified as Unit #7a, #7b, #7c, and #7d.

The PM10 emission limits in the draft PSD air quality permit are also based on the emission rates used in the model to demonstrate compliance with the National Ambient Air Quality Standards and applicable PSD increments. See Table 4.1, draft PSD air quality permit. DENR agrees that it should note that the some of the units for the PM10 emission limits are not in pounds per hour, and that the maximum emission rate listed for every unit cannot be used with the PM10 emission limit to ensure that the hourly PM10 emission rate used in the model will not be exceeded. This applies to Unit #7, #13, #14, #15, #17, #20 through #27, inclusive, #29, #30, #33, #34, and #35. Therefore, DENR agrees to revise Table 4-1 in the draft PSD air quality permit for those units by including the hourly limits used in the PM10 modeling.

2. One commenter questioned the fugitive dust inputs for the PM10 modeling analysis to demonstrate compliance with the 24-hour PM10 National Ambient Air Quality Standard and applicable PSD increments. By using other data that the commenter believes is accurate, exceedances of the 24-hour PM10 National Ambient Air Quality Standard and applicable PSD increments occurred. The commenter listed the following:
 - That Equation (1) should have been used for 24-hour modeling;
 - Otter Tail Power Company used the wrong “N” and “P” values in Equation (3);
 - The silt loading value should be based on industrial roadways instead of rural roadways or actually measured;
 - The methodology of converting from pounds per vehicle miles traveled to grams per second, which was used in the model, could not be determined with the information available in the application;
 - Questioned the paving of the haul roads in the landfill area as proposed in permit condition 4.6 of the draft PSD air quality permit;
 - The threshold friction velocity used to estimate storage pile wind erosion are generally far too high for all materials (e.g., landfill value was assumed to equal a

default value for overburden, even though the landfill contains fly ash and bottom ash);

- The pile maintenance fugitive emissions from the landfill and inactive coal storage piles were calculated assuming a silt content of 2.2%, which is incorrect for both types of storage piles;
- Pile maintenance emissions were estimated using an emission factor equation for unpaved roads rather than for bulldozing; and
- All sources of fugitive emissions were not included in the emission inventory, such as ash dumping in landfill, material loading onto trucks, and material dumping from trucks.

Response: The calculations using the precipitation data was incorrectly calculated and was corrected in the June 2006 application and was remodeled accordingly. The equation used in the application takes into account precipitation, whereas, the suggested equation (1) does not take this factor into account. For fugitive emissions, taking into account precipitation is an appropriate consideration and DENR believes the equation used in the application is preferable.

Otter Tail Power Company does not operate a copper smelting plant, an iron and steel production plant, asphalt batching plant, concrete batching plant, sand and gravel processing plant, a municipal solid waste landfill or a quarry. Therefore the silt loading noted for these processes is not representative of the operations at Otter Tail Power Company. The silt loading values for urban roadways is more representative of the operations at Otter Tail Power Company.

Otter Tail Power Company's application Appendix C notes the calculation and inputs used to derive the emission factors for paved and unpaved roads of pounds per vehicle mile traveled. Appendix C also notes the average vehicle miles traveled per hour. By multiplying the two set of numbers represented on different pages in Appendix C, one will obtain the fugitive particulate emission rate in pounds per hour, which may be converted to grams per second. DENR is able to recreate the emission rates.

The identified ash monofill (landfill) haul road is the road that is used to carry the ash that is collected from operation of the boiler(s) to the ash monofill (landfill). This haul road is to be paved and was represented correctly in the emission calculations. In addition, the application identified pile maintenance of the landfill using emission estimates for unpaved roads. Therefore, the emission calculations took into account the vehicle travel within the landfill itself.

The application notes in the fugitive calculation protocol that the friction velocity of overburden was more representative of the landfill than using the friction velocity for scraper trucks on a coal pile. If fly ash and/or bottom ash come in contact with water, both ashes set up or harden similar to concrete. Otter Tail Power Company uses an irrigation system to maintain the ash monofill (landfill). Therefore, the material in the landfill was more closely related to overburden than to raw coal. The AP42 document lists an average silt content of

2.2 for coal-fired power plants (as coal received). Therefore, the silt content used was appropriate. The permit requires some form of control such as a water spray to mitigate fugitive dust emissions from a waste pit (i.e. ash monofill / landfill) to ensure the accuracy of this calculation.

The commenter suggested an emission calculation for coal pile maintenance based on using a bulldozer at a coal mine. This emission calculation does not take into account the amount of coal that would likely be moved in developing the coal pile or maintaining a coal pile. Otter Tail Power Company's use of unpaved roads does take these concepts into account. Therefore, DENR considered the approach identified by Otter Tail Power Company more appropriate to determine fugitive particulate emissions for maintaining a coal pile.

The application identified emission calculations for in-active coal pile load in, flyash loading into trucks, gypsum pile load in, gypsum pile load out, ash monofill (landfill) load in. The load in and load out were developed for dumping or loading materials from trucks, scrapers, etc. and were based on the drop equation in AP-42, section 13.2.4 (1/95). See Appendix C of the application for the specific equations, etc.

The modeling process is based on the assumption that emissions are continuous and generally based on worse case scenarios. The quantity of fugitive dust emissions is directly related to parameters that are not generally continuous or uniform. Therefore, the modeling tool will over-predict concentrations, particularly in the vicinity of the source, and may incorrectly identify fugitive emissions as the major cause of air pollution at a site.

3. One commenter claims the draft PSD air quality permit fails to establish any emission limits or other requirements for haul roads or other fugitive sources. The commenter stated that the draft PSD air quality permit should contain BACT emission limits (such as pounds per hour) for the fugitive dust sources which should be enforceable as a practical matter (contain averaging times, compliance verification, etc.). The commenter suggested that the assumptions in the fugitive dust analysis should be listed in the permit, such as the haul roads only operating 8 hours per day, along with appropriate monitoring, recordkeeping and reporting. The draft PSD air quality permit should be modified to require a study to measure the key variables used in the emission calculations and to limit the amount of material hauled and the hours of operation as assumed in the model.

Response: Fugitive dust usually refers to dust put into the atmosphere by the wind blowing over plowed fields, dirt roads or desert or sandy areas with little or no vegetation. Re-entrained dust is that which is put into the air by reason of vehicles driving over dirt roads (or dirty roads) and dusty areas. Due to the difficult nature of characterizing and modeling fugitive dust and fugitive emissions, sources are generally characterized as line, area or volume sources in models.

As identified in 40 CFR § 52.21(b)(12), if the Administrator determines that technological or economic limitations on the application of a measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design,

equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such a standard is required, to the degree possible, to set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and is to provide for compliance by means which achieve equivalent results.

There are technological and economic limitations (e.g., enclosing a road) in trying to conduct a performance test to demonstrate compliance with a pounds per hour limitations on a fugitive dust source (e.g. road); therefore, a work practice standard was required in the draft PSD air quality permit. The permit requires the roads to be paved in condition 4.6. The permit requires a work practice to make sure that the dust will not be re-entrained when vehicles etc. drive over it by following permit conditions 7.1, 7.2 and 7.3. Permit condition 7.4 establishes an opacity threshold to verify that the work practice standards are sufficient. DENR agrees the permit is not specific that records be maintained with regards to the application of the work practice standards. Therefore, DENR will be including a record keeping requirement in permit condition 7.5.

4. One commenter stated that no sources in Minnesota were included in the PM10 modeling to demonstrate compliance with the PM10 National Ambient Air Quality Standards.

Response: As identified in Appendix G of the application, Otter Tail Power Company received modeling information from the Minnesota Pollution Control Agency on five sources located in Minnesota to include in the modeling to demonstrate compliance with the National Ambient Air Quality Standards. Those sources in Minnesota are Associated Milk Producers, Chippewa Valley Ethanol Company, Fibrominn, Xcel-Minnesota Valley, and Diversified Energy. Therefore, Otter Tail Power Company did include significant particulate matter emission sources identified by the Minnesota Pollution Control Agency in the modeling.

5. One commenter stated that the PM10 cumulative increment analysis is incorrect.

Response: South Dakota adopted PSD rules on April 22, 1993, as a delegated state. EPA delegated authority under the Clean Air Act regarding the PSD program to South Dakota on September 15, 1994. On September 18, 2006, South Dakota revised its PSD rules and included the rules into South Dakota's State Implementation Plan. EPA approved the PSD rules in South Dakota's State Implementation Plan, effective January 22, 2008.

On November 3, 1995, in 60 FR 55,798, EPA revised 40 CFR § 81.342 to delete the TSP area designation table and create a PM10 area designation table for South Dakota. EPA stated it would retain the two section 107 areas listed in the current TSP table for South Dakota as the designated areas for South Dakota, unless revised by the State in accordance with 40 CFR § 52.21. For those air pollutants that have applicable increments, 40 CFR § 81.342 notes the designated area for PM10 is Rapid City and the rest of the state.

In the August 7, 1980 federal register (at page 52,715), EPA discusses that there were several commenters that opposed the use of Air Quality Control Regions because these areas would

do little to alleviate administrative problems, offered no flexibility to states, and would often limit an area's growth options by encompassing too large an area. EPA stated that it believed that neither the statutes for the Clean Air Act, nor the relevant Alabama Court ruling, supported an Air Quality Control Region approach in defining baseline areas.

As noted in 40 CFR § 52.2172, there are four air quality control regions established for South Dakota; Metropolitan Sioux City Interstate, Metropolitan Sioux Falls Interstate, Black Hills – Rapid City Intrastate, and South Dakota Intrastate. In 40 CFR §§ 81.85, 81.86, and 81.214, the Metropolitan Sioux City Interstate, Metropolitan Sioux Falls Interstate, and Black Hills – Rapid City Intrastate Air Quality Control Regions are defined. Most of these areas cover approximately five or six counties. If these five to six county areas were not supported by the Clean Air Act or the Alabama Court ruling as a baseline area, it is unclear why EPA would establish the rest of the state as a baseline area, which would encompass over 60 counties.

EPA goes on to state in the August 7, 1980 federal register (at page 52,715) that the baseline area should be defined as the area designated as attainment or unclassifiable under section 107(d) in which a source or modification would construct, or on an area which the source or modification would have an impact equal to or greater than one microgram per cubic meter on an annual basis. As noted in the application, generally the particulate significant impact area has a radius of a few miles from the source. As such, a baseline area may be as small as the one microgram per cubic meter on an annual basis impact area for the source and would not cover the “rest of the state”.

Since delegation of the PSD program in 1993, South Dakota has been treating its designated areas for PSD on a county wide basis for all of the air pollutants. This is demonstrated by how South Dakota designated the areas for ozone and particulate matter less than 2.5 microns. For these two pollutants, the designated areas are by county. South Dakota has not received a PSD application for Grant County prior to Otter Tail Power Company's Big Stone II application. Based on how South Dakota has been treating the designated areas, Otter Tail Power Company's Big Stone II application is the first application in Grant County that would trigger the minor source baseline date. South Dakota is currently developing a package to submit to EPA to harmonize how South Dakota has been handling the designated areas and how they should have been designated originally.

The first PSD permit application in South Dakota was submitted to EPA on September 16, 1991, by Northern States Power Company to install four combustion turbines near Sioux Falls, South Dakota. Northern States Power Company was issued a PSD permit by EPA on September 2, 1992, which triggered the minor source baseline data for PM10, sulfur dioxide, and nitrogen oxide for Minnehaha County. In accordance with the current 40 CFR § 81.342, Otter Tail Power Company's application would trigger the area for Grant County because it is in the area of “rest of state” or “entire state”.

6. One commenter questioned if the receptor grid used in Otter Tail Power Company's revised PM10 analysis was adequate to ensure that the maximum PM10 concentration were reflected in the model.

Response: The commenter did not provide any detail on why the receptor grid was inadequate. The requirements for the receptor grid appear in 40 CFR Part 51 Appendix W section 8.2.2 (July 1, 2005) – Critical Receptor Sites. This section states that the receptor sites for refined modeling should utilize sufficient detail to estimate the highest concentration. The selection of receptor sites should be a case-by-case determination taking into consideration the topography, the climatology, monitor sites, etc. The July 1, 2005, version of this section notes that a grid size of 400 receptor points over 10 by 10 kilometer area should be adequate to determine where the highest concentration location would be found. Otter Tail Power Company used a grid that incorporated the following spacing receptors: 1) One receptor point every 50 meters (~165 feet) along the property boundary; 2) One receptor point every 100 meters (~330 feet) from the property boundary out to 1 kilometers; 3) One receptor point every 500 meters (~1,640 feet) from 1 kilometers to 5 kilometers; and 4) One receptor point every 1,000 meters (3,330 feet) from 5 kilometers to 50 kilometers. This grid system contains more than 5,000 receptor points in a 10 by 10 kilometer area. Otter Tail Power Company followed the receptor grid requirements related to PM10 modeling in the PM2.5 analysis.

7. One commenter stated that it was unclear from the text what averaging times were used to establish the modeled emission rates shown in Table 10-16 in the original Statement of Basis. The commenter stated that, for existing point sources, compliance with short term National Ambient Air Quality Standards for PM10, sulfur dioxide, and carbon monoxide should be modeled using maximum actual short term emission rates, while for proposed sources; allowable short term emission rates should be used.

Response: As noted by the commenter, EPA's Guideline on Air Quality Models (40 CFR Part 51 Appendix W) notes that for existing sources, the maximum "actual" short term emission rate should be used to demonstrate compliance with the National Ambient Air Quality Standards. Otter Tail Power Company identified the maximum "actual" short term emission rate as 0.26 pounds per million Btu for Big Stone I. Otter Tail Power Company used that emission rate in its modeling analysis and demonstrated compliance with the National Ambient Air Quality Standards for particulate matter.

8. One commenter argued that the dispersion modeling should include emissions from emergencies when demonstrating compliance with National Ambient Air Quality Standards and PSD increments. The commenter went on to state that the draft PSD air quality permit cannot be issued for Big Stone II because state and federal rules under the Title V air quality program allow exceedances of the BACT limit, which in turn allows the National Ambient Air Quality Standards and PSD increments to be exceeded, which is contrary to the federal Clean Air Act.

Response: Section 160 of the federal Clean Air Act notes one of the purposes of the PSD program is “to protect the public health and welfare from any actual or potential adverse effect which in the Administrator’s judgment may be reasonably anticipated to occur from air pollution.” The protection of public health and welfare is achieved by establishing Best Available Control Technology (BACT) limits in the draft PSD permit and modeling the reasonably anticipated BACT limits to ensure the National Ambient Air Quality Standards (NAAQS) and PSD increments are not exceeded.

The modeling requirements established by EPA in 40 CFR Part 51 Appendix W recommends the use of those BACT limits in demonstrating that the NAAQS and PSD increments are not exceeded. DENR required Otter Tail Power Company to follow the modeling protocol established by EPA. Otter Tail Power Company’s analysis demonstrated that the BACT limits established in the draft PSD permit would not cause an exceedance of the NAAQS or PSD increments.

Emergency conditions are those scenarios that are reasonably unforeseeable and beyond the control of the source. The modeling of emergency conditions is not required by EPA or the state because the level of emissions from emergency conditions can not be predicted with confidence, and because the duration of an emergency condition occurs during brief periods.

In accordance with ARSD 74:36:09, as referenced to 40 CFR § 52.21, DENR established BACT limits in Otter Tail Power Company’s draft PSD permit. Once Big Stone II commences operation, permit condition 2.2 of the draft PSD permit requires Otter Tail Power Company to submit a Title V air quality operating permit application within 12 months after commencing operation of Big Stone II. At that time, the requirements in the PSD permit and the requirements under ARSD 74:36:05:16.01(18) will be included in the Title V air quality permit.

9. One commenter asked how accurate is the air dispersion modeling analysis (ISCST3 model, Version 02035) used to estimate air quality?

Response: 40 CFR Part 51 Appendix W discusses the accuracy of models. The following is an excerpt from Appendix W: The accuracy of the model is normally determined by an evaluation procedure which involves the comparison of model concentration estimates with measured air quality data. The statement of accuracy is based on statistical tests or performance measures such as bias, noise, correlation, etc. However, information that allows a distinction between contributions of the various elements of inherent and reducible uncertainty is only now beginning to emerge. As a result most discussions of the accuracy of models make no quantitative distinction between (1) limitations of the model versus (2) limitations of the data base and of knowledge concerning atmospheric variability. The reader should be aware that statements on model accuracy and uncertainty may imply the need for improvements in model performance that even the “perfect” model could not satisfy.

A number of studies have been conducted to examine model accuracy, particularly with respect to the reliability of short-term concentrations required for ambient standard and

increment evaluations. The results of these studies are not surprising. Basically, they confirm what expert atmospheric scientists have said for some time: (1) Models are more reliable for estimating longer time-averaged concentrations than for estimating short-term concentrations at specific locations; and (2) the models are reasonably reliable in estimating the magnitude of highest concentrations occurring sometime, somewhere within an area. For example, errors in highest estimated concentrations of ± 10 to 40 percent are found to be typical, *i.e.*, certainly well within the often quoted factor-of-two accuracy that has long been recognized for these models. However, estimates of concentrations that occur at a specific time and site, are poorly correlated with actually observed concentrations and are much less reliable.

XX. Big Stone I Consuming PSD Increments

1. Two commenters questioned when construction commenced on Big Stone I. If construction commenced after January 6, 1975, then the Big Stone I PM₁₀ emissions consume the available increment. The commenters requested DENR verify the date construction commenced.

Response: In accordance with 40 CFR § 52.21(b)(9), “commence” as applied to construction of a major stationary source, means the owner or operator has all necessary preconstruction approvals or permits and either has begun or caused to begin a continuous program of actual onsite construction, or entered into a binding agreement or contractual obligation, which cannot be cancelled or modified without substantial loss to the owner or operator.

DENR is not sure when Otter Tail Power Company began actual onsite construction of Big Stone I. However, a letter dated May 5, 1975 from Verlin Menze (Otter Tail Power Company) to Dr. Allyn O. Lockner (DENR) indicated that commercial operation began May 1, 1975. From this letter it can be concluded that actual onsite construction of Big Stone I began before January 6, 1975. In addition, in a September 5, 1972, EPA letter from Irwin Karp (EPA) to H. R. Cowles (Otter Tail Power Company), EPA states that Otter Tail Power Company commenced construction of Big Stone I on January 18, 1971, because “a binding agreement or contractual obligation” for construction of the boiler had been entered into and cancellation of the order for the boiler after January 18, 1971 would have resulted in the imposition of cancellation charges.

This evidence demonstrates that construction of Big Stone I commenced prior to January 6, 1975, and Big Stone I did not consume increment.

2. One commenter states that emissions associated with changes in the method of operation at Big Stone I consume PSD increment and must be included in the modeling analysis used to demonstrate compliance with the applicable PSD increments. For example, the commenter alleges that the emission increases associated with the switch from bituminous to subbituminous coal in 1995 consumed PM₁₀ and nitrogen oxide increments; the increase in emissions resulting from changes to the boiler in 1998 consumed PM₁₀ and nitrogen oxide

increments; and the increases in emissions associated with providing steam to the ethanol plant and turbine efficiency consumed PM10, nitrogen oxide, and sulfur dioxide increments.

Response: South Dakota adopted ARSD 74:36:09 - Prevention of Significant Deterioration (PSD) rules on April 22, 1993, as a delegated state. EPA delegated the PSD program to South Dakota on September 15, 1994. On September 18, 2006, South Dakota revised its PSD rules and included the rules in South Dakota's State Implementation Plan. EPA approved the PSD rules in South Dakota's State Implementation Plan, effective January 22, 2008.

Section XIX, subsection (5) provides a detailed discussion on the baseline date, Section II explains in detail why changes at Big Stone I that the commenter identified were not considered to be major modifications under the PSD program, and Section IV discusses that the plantwide limits for sulfur dioxide and nitrogen oxide are enforceable in a practical manner and allow Big Stone II to avoid a PSD review for those pollutants. Therefore, this discussion will be related to the PM10 increment concern.

For this discussion, DENR will look at the baseline date of 1991 because this was the year the first PSD permit application was submitted for a facility near Sioux Falls, which is in southeastern South Dakota. Otter Tail Power Company began construction of Big Stone I approximately in 1971, well before the PSD rules' January 6, 1975 construction deadline. Therefore, Big Stone I is considered an existing source for PSD purposes.

In accordance with 40 CFR § 52.21(b)(13)(ii), an existing source's actual emissions associated with a physical change or change in the method of operation, and not its potential emissions, consume or expand the available increments. As identified in 40 CFR § 52.21(b)(21)(iii), DENR may presume that the allowable emissions from Big Stone I are equivalent to the actual emissions. In 1991, Big Stone I had an allowable emission rates of 0.3 pounds of particulate matter per million Btus, which equates to approximately 7,400 tons per year. Table #1 notes Otter Tail Power Company's annual emissions since 1991.

Table #1 – Otter Tail Power Company's Annual Emissions

Year	Particulate Matter (ton)
1991	282
1992	273
1993	276
1994	294
1995	282
1996	281
1997	314
1998	282
1999	360
2000	349
2001	336

Year	Particulate Matter (ton)
2002	234
2003	28
2004	29
2005	27
2006	30
2007	203

It should be noted that the increase in particulate matter emissions from 2006 to 2007 was due to the removal of an advance hybrid particulate collector, which was a temporary clean coal technology. As noted in 40 CFR § 52.21(b)(2)(iii)(i) and 40 CFR 60.14(k), the installation, operation, cessation, or removal of a temporary clean coal technology is not considered to be a physical change or change in the method of operation. Therefore, the removal of the advance hybrid particulate collector was not applicable to the PSD program or New Source Performance Standards.

If one ignores the fact that Big Stone I has not had a major modification, using the 1991 minor source baseline date indicates that Big Stone I has potentially expanded the increments for particulate matter.

Even if the above information is not reviewed, the review of the ambient monitoring data noted in Section IV, subsection (5) demonstrates that the monitored ambient concentrations for sulfur dioxide and nitrogen oxide are below the PSD increments throughout the state of South Dakota. In this review the monitored ambient concentrations contain all emissions sources, which include those sources that do not consume increments.

XXI. BACT Analysis for Carbon Monoxide

1. Two commenters believe that the established BACT limit for carbon monoxide in the draft PSD air quality permit does not represent BACT. One commenter suggested the carbon monoxide emission limit should be established like the Public Service Company in Colorado (0.13 pounds per million Btus). The other commenter recommended that DENR review additional proposed and final permits since the initial draft PSD air quality permit was proposed in 2006 for lower BACT limits and more restrictive averaging times.

Response: Each facility has its own design and an understanding of the similarities and the processes of each permitted unit is necessary when comparing emission limits from different permits. The properties of the coal being burned, the design of the boiler, etc. all affect the emission characteristics of the gas stream. A BACT limit will be affected by how many differences exist between the systems one compares, and how those differences affect the emission characteristics. Therefore, assuming the lowest emission limit permitted is achievable for every design and application is an invalid and inappropriate approach to developing a BACT limit.

Otter Tail Power Company proposed a 600 megawatt supercritical pulverized coal-fired boiler. The Public Service Company power plant is similar in size and boiler type as proposed for Big Stone II with a carbon monoxide BACT emission limit of 0.13 pounds per million Btu. The BACT emission limit range DENR found in the original review of Otter Tail Power Company's application ranged from 0.13 to 0.16 pounds per million Btu. DENR also reviewed the BACT emission limits for carbon monoxide from power plants permitted in 2005 to 2007. For units similar in size to Big Stone II, the carbon monoxide BACT emission limit ranged from 0.135 to 0.2 pounds per million Btus. The demonstration of compliance ranged from a one hour maximum to a 30-day rolling average.

DENR agreed with the top down BACT analysis conducted by Otter Tail Power Company which resulted in good combustion practices for carbon monoxide. The BACT emission limit of 0.15 pounds of carbon monoxide per million Btu is within the range being established at other power plants and is acceptable. Demonstrating compliance on a 30-day rolling average is similar to what other states are doing and is acceptable. DENR does not recommend any changes.

XXII. BACT Analysis for Fluoride

1. Two commenters believe that the established BACT limit for fluoride in the draft PSD air quality permit does not represent BACT. One commenter suggested the fluoride emission limit should be established at 0.00049 pounds per million Btus, as established at the Hastings Utilities facility in Nebraska and the Public Service Company facility in Colorado. The other commenter recommended DENR review additional proposed and final permits since the initial draft PSD air quality permit was proposed in 2006 for lower BACT emission limits and more restrictive averaging times.

Response: Each facility has its own design and an understanding of the similarities and the processes of each permitted unit needs to be understood when comparing emission limits from different permits. The properties of the coal being burned, the design of the boiler, etc. all affect the emission characteristics of the gas stream. A BACT limit will be affected by the number of differences between the systems one compares and how those differences affect the emission characteristics. Therefore, assuming the lowest emission limit permitted is achievable for every design and application is an invalid and inappropriate approach to developing a BACT limit.

Otter Tail Power Company proposed a 600 megawatt supercritical pulverized coal-fired boiler. The Public Service Company power plant is similar in size and boiler type as proposed for Big Stone II with a fluoride BACT emission limit of 0.00049 pounds per million Btu. The BACT emission limit range DENR found in the original review ranged from 0.0004 to 0.0009 pounds per million Btu. DENR also reviewed the BACT emission limits for fluorides from power plants permitted in 2005 to 2007. For units similar in size to Big Stone II, the fluorides BACT emission limit ranged from 0.0004 to 0.0043 pounds per million Btus. The demonstration of compliance ranged from a stack performance test to a three hour rolling average.

DENR agreed with the top down BACT analysis conducted by Otter Tail Power Company which resulted in wet flue gas desulfurization for fluorides. The BACT emission limit of 0.0006 pounds of fluorides per million Btu is within the range being established at other power plants and is acceptable. Demonstrating compliance based on a stack performance test is similar to what other states are doing and is acceptable. DENR does not recommend any changes.

XXIII. BACT Limit for Volatile Organic Compounds

1. Two commenters believe that the established BACT limit for volatile organic compounds in the draft PSD air quality permit does not represent BACT. One commenter suggested the volatile organic compound emission limit should be established at 0.0034 pounds per million Btus. The other commenter recommended DENR review additional proposed and final permits and averaging times since the initial draft PSD air quality permit was proposed in 2006.

Response: Each facility has its own design and an understanding of the similarities and the processes of each permitted unit needs to be understood when comparing emission limits from different permits. The properties of the coal being burned, the design of the boiler, etc. all affect the emission characteristics of the gas stream. A BACT limit will be affected by the number of differences between the systems one compares and how those differences affect the emission characteristics. Therefore, assuming the lowest emission limit permitted is achievable for every design and application is an invalid and inappropriate approach to developing a BACT limit.

Otter Tail Power Company proposed a 600 megawatt supercritical pulverized coal-fired boiler. The BACT emission limit range DENR found in the original review of the application ranged from 0.0034 to 0.01 pounds per million Btu. DENR also reviewed the BACT emission limits for volatile organic compounds from power plants permitted in 2005 to 2007. For units similar in size to Big Stone II, the volatile organic compound BACT emission limit ranged from 0.0034 to 0.015 pounds per million Btus. Demonstration of compliance was typically based on a stack performance test.

DENR agreed with the top down BACT analysis conducted by Otter Tail Power Company which resulted in good combustion practices for volatile organic compounds. The BACT emission limit of 0.0036 pounds of volatile organic compounds per million Btu is within the range being established at other power plants and is acceptable. The use of a stack performance test to demonstrate compliance is similar to what other states are doing and is acceptable. DENR does not recommend any changes.

XXIV. Review of Big Stone I Proposed Changes Subject to PSD

1. One commenter alleges that DENR cannot authorize operational changes at Big Stone I without a review of whether those changes should be subject to PSD permitting as a major modification. In particular, the commenter asserts that Otter Tail Power Company's proposal to use the over-fire air system more aggressively to maintain nitrogen oxide emissions at less than the plantwide cap, has the potential to increase carbon monoxide and volatile organic compound emissions and ought to be considered a major modification.

Response: DENR disagrees that a review has to be conducted on Otter Tail Power Company's proposal to use the over-fire air system more aggressively. A major modification is defined as any physical change, or change in the method of operation, that would result in a significant increase of a regulated pollutant. See 40 CFR § 52.21(b)(2). A physical change or change in the method of operation does not include routine maintenance, repair, and replacement, or any increase in hours of operation or in the production rate.

An over-fire air system is a staged combustion system that is completed in two or more steps. A percentage of the total combustion air is diverted from the burners and injected through ports above the top burners. The total amount of combustion air to the combustion system remains unchanged. The coal is initially combusted in a primary, fuel-rich, combustion zone. By reducing the amount of air used in the primary combustion, which is burned at higher temperatures, the amount of nitrogen oxides that is formed is reduced. The combustion is completed at lower temperatures in a secondary fuel-lean combustion zone, which also reduces the amount of nitrogen oxide emissions that is formed. An over-fire air system may reduce flame stability, increase upper ash deposits, referred to as "slagging", and increase corrosion. These types of issues affect the routine maintenance, repair, and replacement of the equipment.

Otter Tail Power Company is not physically changing the over-fire air system. Instead, Otter Tail Power Company plans to use the over-fire air system more aggressively. Otter Tail Power Company will push the parameters at which the over-fire air system is operated to minimize the generation of nitrogen oxide emissions, such as changing the percentage of air that is used in each of the combustion zones. As a physical change in or change in the method of operation does not include any increase of hours of operations or the production rate, Otter Tail Power Company may push its equipment as hard or as many hours as it chooses so long as it meets the requirement of its permit and the equipment is able to accommodate those operations without any changes or alterations. Otter Tail Power Company does not have a permit condition that restricts how much air has to be burned in either of the two combustion zones. Further, these parameters are not outside the range of parameters by which Otter Tail Power Company has operated in the past. As such, using the over-fire air system is not considered a change in the method of operation, and is therefore not a major modification under the PSD program.

XXV. All Applicable Provisions in Title V Permit

1. One commenter stated that the draft Title V air quality permit is required to include all requirements applicable to a source and should include all of the requirements in the draft PSD air quality permit. If not included, the commenter believes the draft Title V air quality permit is “illegal” because it authorizes the operation of Big Stone II without including all other applicable requirements from the draft PSD air quality permit.

Response: The commenter is correct that the Title V air quality permit is required to contain all of the applicable requirements. However, in accordance with the ARSD 74:36:05:03.01, the owner or operator of a source required to obtain a PSD permit is not required to submit an application to include those applicable requirements developed in the PSD review in the Title V air quality permit until 12 months after commencing operation. ARSD 74:36:05:03.01 was promulgated to be consistent with 40 CFR § 70.5(a)(1)(ii), which states, “Part 70 sources required...to have a permit under the preconstruction review program approved into the applicable implementation plan under part C (PSD) or D (New Source Review of Nonattainment Areas) of title I of the Act, shall file a complete application to obtain the part 70 permit or permit revision within 12 months after commencing operation or on or before such earlier date as the permitting authority may establish...”

In this case certain air pollutants are covered under the draft PSD air quality permit (e.g., particulate matter, volatile organic compounds, carbon monoxide, sulfuric acid mist, and fluorides) and others are covered under the draft Title V air quality permit since the pollutants are not subject to a PSD review (e.g., sulfur dioxide and nitrogen oxide). DENR placed all applicable requirements from the Big Stone II project related to sulfur dioxide and nitrogen oxide in the draft Title V air quality permit and will include the applicable requirements in the draft PSD air quality permit once Otter Tail Power Company submits the application to revise the Title V air quality permit in accordance with ARSD 74:36:05:03.01. Permit condition 2.2 of the draft PSD air quality permit requires Otter Tail Power Company to submit that application within 12 months of commencing operation and specifies that the commencement of operations occurs on the first date that the boiler was operated when firing pulverized coal.

DENR disagrees that the requirements in the draft PSD air quality permit must be included in the draft Title V air quality permit. In accordance with state and federal rules, Otter Tail Power Company has 12 months after commencing operation of Big Stone II (Unit #13) to submit a Title V air quality permit application to include the applicable requirements from its PSD air quality permit. No change is recommended.

XXVI. Case-By-Case MACT Analysis

1. Three commenters discuss the February 8, 2008, decision by the U.S. Court of Appeals for the District of Columbia Circuit that vacated the Clean Air Mercury Rule. One commenter alleges that because of that decision, a case-by-case Maximum Achievable Control

Technology Standard (MACT) needs to be developed and public noticed for Big Stone II. Two commenters assert that the decision is not final until the court issues a mandate, which may be prolonged by any appeals or request to stay the decision.

Response: EPA's final rules that regulated mercury emissions from coal-fired electric power plants were effective March 29, 2005. See 70 Fed. Reg. 15994-16035 (March 29, 2005). The final standards established specific mercury emission limits for new coal-fired electric power plants and established a mercury cap and trade program for existing and new coal-fired power plants. The final standards were adopted pursuant to section 111 of the Clean Air Act, which establishes standards of performance for new stationary sources. DENR adopted these rules and included the requirements in the draft PSD air quality permit and draft Title V air quality permit.

On February 8, 2008, the United States Court of Appeals for the District of Columbia Circuit issued a decision that vacated those standards. See *State of New Jersey v. EPA*, No. 05-1097 (February 8, 2008). In addition to the standards, the recordkeeping, reporting, testing, and monitoring requirements associated with these standards were also vacated. The decision identifies that the standards could not be established pursuant to section 111 of the Clean Air Act as set forth by EPA.

Based upon discussions with EPA Region 8, DENR understands that EPA has requested rehearing en banc. EPA Region 8 was unsure if EPA requested a stay of the decision.

Assuming this decision is final, the Big Stone II project would have to be reviewed under section 112 of the Clean Air Act if it is a major source of hazardous air pollutants. Section 112(g) of the Clean Air Act applies to major sources of hazardous air pollutants that were constructed or reconstructed after June 29, 1998. A major source of hazardous air pollutants is a source that has the potential to emit greater than 10 tons of a single hazardous air pollutant, or 25 tons per year of any combination of hazardous air pollutants.

Based on Big Stone I's annual operational reports, which identify its amount of hazardous air pollutant emissions, Big Stone I is considered to be a major source of hazardous air pollutants. However, since Big Stone I was constructed prior to June 29, 1998, and is not being reconstructed due to the Big Stone II project, this requirement is not applicable to Big Stone I.

Since EPA has not promulgated a standard pursuant to section 112, the Big Stone II project would have to follow the requirements specified in section 112(g) of the Clean Air Act by following the rules established in 40 CFR §§ 63.40 through 63.44, adopted by reference at ARSD 74:36:08:03.01. As defined in 40 CFR § 63.41, any new process or new unit at Big Stone I that would be a major source of hazardous air pollutants is required to comply with these rules. The Big Stone II project would fall under the new process or new unit portion of the definition, and is required to comply with these rules.

In Otter Tail Power Company's comments submitted on the draft permits, Otter Tail Power Company submitted a case-by-case MACT determination to fulfill section 112(g) of the Clean Air Act requirement in case the Court vacated the Clean Air Mercury Rule. On March 20, 2008, Otter Tail Power Company withdrew the case-by-case MACT determination because Otter Tail Power Company believes the Big Stone II project is not a major source of hazardous air pollutants.

Otter Tail Power Company's calculations are based on emission factors derived by the Electric Power Research Institute's Land-Air Estimating, Reporting and Recordkeeping system (EPRI LARK) and from EPA's AP-42 documents for the main boiler (Unit #13). Otter Tail Power Company's calculations for Unit #13 indicate the potential to emit of any combination of hazardous air pollutants is 22 tons per year. In addition, Otter Tail Power Company's calculations for Unit #13 indicate the potential to emit hydrochloric acid (a single hazardous air pollutant) is 9.5 tons per year, the potential to emit hydrofluoric acid (a single hazardous air pollutant) is 9.5 tons per year and the potential to emit selenium (a single hazardous air pollutant) is 0.5 tons per year. These are the three highest single hazardous air pollutants to be emitted from Unit #13 according to Otter Tail Power Company's calculations. Otter Tail Power Company also indicates that the potential to emit mercury (a single hazardous air pollutant) from Unit #13 is 0.04 tons per year (78 pounds).

Besides the main new boiler (Unit #13), Otter Tail Power Company did not provide an analysis for the other new equipment. A review of the other equipment identifies that the hazardous air pollutant emissions from these sources would be negligible.

The United States Geological Survey's US Coal Quality Database lists the concentration of various compounds found in coal throughout the United States. The database may be located on the internet at <http://energy.er.usgs.gov/coalqual.htm>. DENR reviewed the coal analysis for the Powder River Basin in the state of Wyoming. Using this database, the average concentration in parts per million by weight was obtained for Arsenic (As), Beryllium (Be), , Cobalt (Co), Chromium (Cr), Mercury (Hg), Manganese (Mn), Nickel (Ni), Lead (Pb), Antimony (Sb), and Selenium (Se). These averages are slightly different than that submitted by Otter Tail Power Company because the data is not specific to the mine from which Otter Tail Power Company obtains its coal. These averages may be observed in Table #1.

Table #1 – Metal Hazardous Air Pollutant Concentrations in Coal

Compound	Parts Per million	Percent
Arsenic (As)	4.63	0.00046
Beryllium (Be)	0.71	0.00007
Cadmium (Cd)	0.11	0.00001
Cobalt (Co)	2.41	0.00024
Chromium (Cr)	7.25	0.00073
Mercury (Hg)	0.11	0.00001
Manganese (Mn)	60.17	0.00602
Nickel (Ni)	5.89	0.00059

Compound	Parts Per million	Percent
Lead (Pb)	4.86	0.00049
Antimony (Sb)	4.63	0.00046
Selenium (Se)	0.71	0.00007
Total HAP Metals		0.0086

DENR assumed that the same percentage of these heavy metals would be observed in the particulate emissions from the coal and lime handling operations. Therefore, by multiplying the percent of each compound by the particulate emission rate for each coal and lime handling operation, an estimate on the amount of these pollutants is obtained. Table #2 lists the units associated with Big Stone II and the potential emissions.

Table #2 – Metal Hazardous Air Pollutant Emissions from Coal and Lime Operations

Unit	Description	PM10 (pounds/hour)	Percent Total HAP Metals	Total HAPs (tons/year)
#7a - #7d	Rotary car dumper building	9.5	0.0086	0.0036
#17	Coal reclaim system	0.6	0.0086	0.0002
#20	Limestone reclaim conveyor	0.6	0.0086	0.0002
#21	Limestone receiving system	0.5	0.0086	0.0002
#22	Plant coal transfer and silo fill	3.0	0.0086	0.0011
#23	Fly ash silo bin vent	0.9	0.0086	0.0003
#24	Limestone day bin vent #1	0.3	0.0086	0.0001
#26	Coal plant transfer system	0.4	0.0086	0.0002
#27	Coal crusher house	1.3	0.0086	0.0005
#29	Limestone precrusher building	0.2	0.0086	0.0001
#30	Coal stack out system	0.7	0.0086	0.0003
#34	Pretreatment soda ash bin vent	0.1	0.0086	0.0001
#35	Pretreatment lime bin vent	0.1	0.0086	0.0001
Total HAPs				0.007

For fuel burning units besides the main boiler, DENR used AP 42, Fifth Edition, Volume I Chapter 3: Stationary Internal Combustion Sources, Chapter 3.4 - Large Stationary Diesel and All Stationary Dual-fuel Engines, to calculate hazardous air pollutant emissions. The results may be viewed in Table #3.

Table #3 – Organic Hazardous Air Pollutant Emissions from Other Fuel Burning Units

Unit	Description	Estimated Heat Input (MMBtu per hour)	Emission Factor (pounds per MMBtu)	Total HAPs (tons/year)
#14	Fire pump fired	3.5	0.00157	0.0014
#15	Generator	25.5	0.00157	0.0100
#25	Booster pump	2	0.00157	0.0008
#33	Booster pump	2	0.00157	0.0008
Total HAPs				0.0130

The hazardous air pollutants from the other operations associated with Big Stone II are insignificant when compared to Unit #13. Due to uncertainties regarding the validity of the rules applicable to this subject, DENR is proposing the following:

- (1) For Otter Tail Power Company to qualify as a minor source of hazardous air pollutants, the draft Title V air quality permit will be revised to place emission limits on hydrogen fluoride, hydrogen chloride, and mercury. In addition, a cap on the Big Stone II operation of 9.5 tons for a single hazardous air pollutant per 12-month rolling period, and of 23.8 tons for any combination of hazardous air pollutants per 12-month rolling period, will be added to the draft Title V air quality permit;
- (2) A mercury plantwide limit of 189 pounds per 12-month rolling period for both Big Stone I and Big Stone II will be added to the draft Title V air quality permit. This limit was proposed by Otter Tail Power Company in the proceedings for approval from South Dakota's PUC;
- (3) The conditions associated with the Clean Air Mercury Rule will be removed from the draft PSD air quality permit and draft Title V air quality permit; and
- (4) The appropriate monitoring, recordkeeping and reporting requirements necessary for the demonstration of compliance with the specific emission limits and plantwide emission limits will be added to the draft Title V air quality permit.

DENR did not propose specific emission limits for the other hazardous air pollutants because the current BACT limits for particulate matter, carbon monoxide, and volatile organic compounds will be used as surrogates. The metal hazardous air pollutants such as lead, manganese, etc. are generally a subset of the particulate emissions. Therefore, minimizing particulate emissions by using the baghouse will minimize those metal hazardous air pollutants. The organic hazardous air pollutants, such as benzene, hexane, etc. are a subset of the volatile organic compounds. Good combustion practices will control the volatile organic compounds and carbon monoxide. Therefore, minimizing the volatile organic compounds and carbon monoxide emissions also minimizes the organic hazardous air pollutants.

The proposed additional limits will be equivalent to or more stringent than the requirements already existing in the draft permits. Therefore, these changes do not need to be public noticed again.

XXVII. Endangered Species Act

1. Two commenters stated that DENR failed to carry out its obligations as an agent of the federal government with respect to the Endangered Species Act. One of the commenters argued that since EPA delegated the PSD program to DENR and the Endangered Species Act applies to the issuance of a PSD air quality permit, DENR must, on the behalf of EPA, consult pursuant to section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service over the impacts of permit issuance to species listed as threatened or endangered.

Response: Since these comments were submitted, DENR has submitted and EPA has approved South Dakota's PSD program in South Dakota's SIP, effective January 22, 2008.

With either a delegated or approved state program, the EPA Appeal Board has determined that the consultation requirement under the Endangered Species Act can not be delegated to a state. The EPA Appeal Board's decision also notes that the consultation by EPA and the PSD permitting process are separate requirements and may proceed in parallel. See PSD Appeal No. 03-04, decided March 17, 2006, at 7. EPA Region VIII also confirmed that the two processes can proceed in parallel. See EPA's comment letter, dated June 26, 2006. As such, South Dakota does not have the authority to require or perform this consultation. Therefore, DENR may move forward with Big Stone II's PSD air quality permit while EPA separately evaluates this project under the Endangered Species Act.

XXVIII. Mercury

1. One commenter asked how Big Stone II will be controlling mercury emissions, how well does the wet flue gas desulfurization system control mercury emissions, is this the only proposed method of mercury control, or does the baghouse control mercury as well, and how effective is a baghouse in controlling mercury? Another commenter suggested that Otter Tail Power Company look to implement a MACT standard for the control of mercury emissions before the construction process begins and not at a future date when retrofitting Big Stone I and II to meet new mercury emission standards. The commenter recommended that Otter Tail Power Company should take the industry lead and show a sincere concern for our environment and control mercury emissions through a MACT standard for our future generations.

Response: The range of control efficiency of pollution control equipment is dependent upon whether the multi pollutant system (e.g., selective catalytic reduction, a baghouse/fabric filter, and a wet flue gas desulfurization system) is enhanced or optimized. Based on EPA's Control of Mercury Emissions from Coal-Fired Electric Utility Boilers, February 18, 2005, document, it is projected that Big Stone II by itself will have a mercury control efficiency range of 70 to 95 percent.

It is important to note that Otter Tail Power Company has committed to maintain mercury emissions from Big Stone I and II at the levels Big Stone I emitted in 2004, which is 189 pounds per year. Since EPA's mercury rules for coal-fired electric power plants were vacated (see Section XXVI), DENR is proposing to place this plantwide limit in the draft Title V air quality permit, along with conditions concerning continuous emission monitoring equipment on Unit #1 and #13, quality assurance measures, record keeping, and reporting to ensure compliance with this plantwide limit on mercury.

XXIX. Regional Haze BART

1. One commenter stated that if the proposed limits for PSD will allow Big Stone to avoid potential Best Available Retrofit Technology (BART) requirements, it should be made clear to the public in the Statement of Basis for the draft PSD air quality permit.

Response: BART requirements are not applicable to the Big Stone II project. In addition, Otter Tail Power Company has not requested any BACT emission limits in the draft PSD air quality permit for Big Stone I to be used to avoid potential BART requirements.

XXX. Additional Impact Analysis

1. One commenter stated that vegetation impact analysis must examine the full impact of carbon dioxide. The commenter alleges that carbon dioxide is another source of carbon – again, the main cause of global warming – in the atmosphere, and long-term temperature and moisture changes are the major limiting factors for geographic ranges of plants and animals.

Response: The same response listed in Section X, subsection (1) is applicable to this comment.

DENR adopted the federal PSD program by reference in ARSD Chapter 74:36:09 – Prevention of Significant Deterioration. In accordance with state and federal laws and rules, carbon dioxide is not considered a regulated NSR pollutant and Otter Tail Power Company is not required to analyze the impacts of carbon dioxide on vegetation.

2. One commenter stated that vegetation impact analysis must examine the full impact of mercury. The commenter alleges that when mercury enters the water, it is transformed to a more toxic substance called methylmercury, which is easily absorbed by plants and small bacteria. The commenter alleges that airborne mercury would affect Big Stone Lake and Minnesota's Big Stone State Park, which are known for fishing, recreation, and camping.

Response: Mercury is listed in the Clean Air Act as a hazardous air pollutant. See section 112(b)(1) of the Clean Air Act. The Clean Air Act specifies that the PSD program shall not apply to hazardous air pollutants. See section 112(b)(6) of the Clean Air Act. Therefore, Otter Tail Power Company is not required to analyze mercury emissions under the PSD program.

Although mercury is not regulated under the PSD program, DENR is proposing mercury requirements in the draft Title V air quality permit. One of those requirements, which Otter Tail Power Company agreed to in the proceedings before the South Dakota's PUC discussed above, is a plantwide mercury limit from Big Stone I and II of 189 pounds per 12-month rolling period. This plantwide mercury limit is based on actual emissions from Big Stone I in 2004. See Section XXVI for more details on regulating mercury.

3. One commenter stated that the effect that Big Stone II will have on the remnants of native tall grass prairie at Big Stone National Wildlife Refuge should be considered in the PSD permitting process. The commenter alleges that the refuge is an area of special national natural, recreational, scenic, and historic value, and any effects that Big Stone II will have on vegetation will impact this important and rare prairie ecosystem (and also the only population of ball cactus – an endangered species – in Minnesota). The commenter does recognize that the PSD application claims the Big Stone II's emissions (including sulfur dioxide, nitrogen

oxide, carbon monoxide, and particulate matter) will have an insignificant effect on vegetation based on several dated scientific studies (mostly from the 1970's and 1980's); but the commenter claims these studies ignore the effects of acid rain, carbon dioxide, or mercury on vegetation. The commenter asserts that, according to current research, concentrations of polluting gases (such as sulfur dioxide and nitrogen oxide) typically found in urban areas are within a range inhibitory to plant growth. In addition, particulate matter screens out sunlight and interferes with photosynthesis in plants. Vegetation weakened by air pollution can become more susceptible to invasion by pathogens and pests.

Response: Pursuant to 40 CFR § 52.21(o), additional impact analysis requires the following:

- (1) The owner or operator shall provide an analysis of the impairment to visibility, soils and vegetation that would occur as a result of the source or modification, and general commercial, residential, industrial and other growth associated with the source or modification. The owner or operator need not provide an analysis of the impact on vegetation having no significant commercial or recreational value.
- (2) The owner or operator shall provide an analysis of the air quality impact projected for the area as a result of general commercial, residential, industrial and other growth associated with the source or modification.
- (3) Visibility monitoring. The Administrator may require monitoring of visibility in any Federal class I area near the proposed new stationary source for major modification for such purposes and by such means as the Administrator deems necessary and appropriate.

Even though the commenter states that there is current research available, the commenter does not cite, specify or identify that current research. DENR's review of Otter Tail Power Company's application indicates that the proposed project would not exceed a National Ambient Air Quality Standard that protects both the public's health and public's welfare and would not result in a significant impact to vegetation.

4. One commenter stated that Big Stone II's effect on waterfowl in the refuge must be considered in the PSD permitting process. The commenter asserts that the Big Stone National Wildlife Refuge is a major waterfowl and migration area, and that many of the refuge's objectives relate to waterfowl and other migratory birds. The commenter also noted that there is a mapped bald eagle nest about 0.3 miles from the Big Stone I site, and that the bald eagle remains a federally threatened species. The commenter alleges that Big Stone II's mercury output in particular could have a detrimental effect on these bird populations and the goals of the Big Stone National Wildlife Refuge. In addition, the commenter asked, how will vegetation realistically respond to additional sulfur dioxide and nitrogen oxide in the local environment?

Response: Mercury is listed in the Clean Air Act as a hazardous air pollutant. See section 112(b)(1) of the Clean Air Act. The Clean Air Act specifies that the PSD program shall not apply to hazardous air pollutants. See section 112(b)(6) of the Clean Air Act. Therefore, Otter Tail Power Company is not required to analyze mercury emissions under the PSD program.

Although mercury is not regulated under the PSD program, DENR is proposing mercury requirements in the draft Title V air quality permit. One of those requirements, to which Otter Tail Power Company agreed in the proceeding before the South Dakota's PUC, is a plantwide mercury limit on Big Stone I and II of 189 pounds per 12-month rolling period. This plantwide mercury limit is based on actual emissions from Big Stone I in 2004. Therefore, there should be no impact on the waterfowl since there will be no increase in mercury emissions.

In the case of sulfur dioxide and nitrogen oxide emissions, Otter Tail Power Company has accepted plantwide limits on both Big Stone I and II at the average sulfur dioxide and nitrogen oxide emissions from Big Stone I in 2003 and 2004. By not increasing sulfur dioxide and nitrogen oxide emissions, there should be no impact on waterfowl.

Section 109 of the Clean Air Act requires that EPA issue primary and secondary National Ambient Air Quality Standards for each criteria pollutant, as it finds appropriate. The primary National Ambient Air Quality Standards set forth the ambient air quality standards which the Administrator of EPA determines are necessary to protect public health. This determination requires public health policy judgments as to what level of air quality is required to protect sensitive groups (although not the most sensitive individual in those groups) within the population from adverse health effects. The determination of the level necessary to provide an adequate margin of safety to protect the public health is a policy decision that rests in the discretion of the Administrator of EPA.

The secondary National Ambient Air Quality Standards set forth the level of air quality which the Administrator of EPA determines is necessary to protect the public welfare from any known or anticipated adverse effects. The Clean Air Act defines welfare effects as including effects on vegetation, crops, soils, water, wildlife, man-made materials, and visibility, among others.

40 CFR § 52.21(k) requires the owner or operator of a proposed source or modification to demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of:

- (1) Any national ambient air quality standard in any air quality control region; or
- (2) Any applicable maximum allowable increase over the baseline concentration in any area.

Otter Tail Power Company's application demonstrates that the National Ambient Air Quality Standards that protect both the public's health and its welfare would not be exceeded. DENR reviewed the air quality analysis and agreed with the results. In addition, neither Otter Tail Power Company nor DENR have found, through monitoring, an exceedance of the ambient air quality in the area proposed for the Big Stone II project.

5. One commenter asked if Big Stone I and II would be monitored for their combined impact on vegetation; wildlife; parks; and places of cultural, historical, or scientific value, and whether there would be any monitoring of endangered or threatened plants and animals that could be affected by Big Stone I and II?

Response: 40 CFR § 52.21(m)(2) requires the owner or operator of a major stationary source or major modification, after construction of the stationary source or modification, to conduct the ambient monitoring as the permitting authority determines is necessary to determine the effect emissions from the stationary source or modification may have, or are having on air quality in any area. DENR's review of Otter Tail Power Company's application indicates that the proposed project would not exceed a National Ambient Air Quality Standard that protects both the public's health and public's welfare and would not result in a significant impact to vegetation. Therefore, no additional monitoring is warranted.

6. One commenter stated that Big Stone II will contribute to the decline of air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special recreational, scenic, and historic value. The commenter further states that the nitrogenous and sulfurous pollutants will fall as acid rain precipitation, which will erode important cultural and historical monuments, and harm aquatic and terrestrial ecosystems. In particular, it is stated that Big Stone II's effect on the King of Trails (scenic Highway 75) and Big Stone Lake State Park needs to be considered in the PSD permitting process.

Response: Section 109 of the Clean Air Act requires that EPA issue primary and secondary National Ambient Air Quality Standards for each criteria pollutant, as appropriate. Secondary National Ambient Air Quality Standards are to specify a level of air quality which the Administrator of EPA determines is required to protect the public welfare from any known or anticipated adverse effects. The Clean Air Act defines welfare effects to include effects on vegetation, crops, soils, water, wildlife, man-made materials, and visibility, among others.

40 CFR § 52.21(k), source impact analysis, requires the owner of a proposed source or modification to demonstrate that allowable emission increases from the proposed source or modification, in conjunction with all other applicable emissions increases or reductions (including secondary emissions), would not cause or contribute to air pollution in violation of:

- (1) Any national ambient air quality standard in any air quality control region; or
- (2) Any applicable maximum allowable increase over the baseline concentration in any area.

DENR submitted the application for the proposed project to the Federal Land Managers to determine if they had any concerns related to this project. The Federal Land Managers stated that, because of the distance of this project from any Class I areas they did not believe this project would have an impact on any Class I National Park or National Wilderness Area. The Federal Land Managers requested that DENR have Otter Tail Power Company model the visibility impacts of the proposed project on the Pipestone National Monument, which is a Class II area in Minnesota. Class II areas include special recreational, scenic, and sites of

historic value. The analysis performed by Otter Tail Power Company demonstrates that the proposed project will not have an impact on the Class II areas identified by the Federal Land Managers.

DENR's review of Otter Tail Power Company's application verifies the national ambient air quality standards that protect the public's welfare would not be exceeded. In addition, the analysis demonstrates the proposed project will not cause an exceedance of a baseline concentration. Otter Tail Power Company monitored the ambient air in the area for one year and did not monitor an exceedance of the secondary National Ambient Air Quality Standards. DENR is monitoring the ambient air in Watertown, which is approximately 40 miles southeast from the proposed project, and has not monitored an exceedance of the secondary National Ambient Air Quality Standards.

The proposed project will not increase nitrogen oxide and sulfur dioxide emissions because Otter Tail Power Company is accepting operational restrictions that prevent any such increase. This is important because the sulfur dioxide and nitrogen oxide emissions which produce acid rain and may drift miles from the site will not increase because of this project and may actually decrease.

XXXI. General Comments

1. Two commenters urged DENR to identify the date the public notice period ends in the public notice. The two commenters argued that without a specified ending date, the public cannot determine when EPA's 45 day review period of the Title V permit starts, or when citizens may petition the Administrator within 60 days after the expiration of EPA's 45 day review period. See 40 CFR § 70.8(d)).

Response: DENR disagrees that the public notice must identify a date certain for the end of the public comment period. As the commenters mentioned, the public notice states, "Comments must be received by DENR within 30 days of this public notice." The individual reading the public notice in the paper has the date the paper was noticed and can easily add 30 days to the publication date to determine when the 30 day public comment period ends. On the Air Quality Program's web page, DENR identifies the end date since there is no beginning date identified as in a newspaper public notice.

ARSD 74:36:05:17 was written to meet the requirements in 40 CFR § 70.7(h)(4), which states "The permitting authority shall provide at least 30 days for public comment..." In accordance with ARSD 74:36:05:17, the public notice for a Title V air quality permit must include the following language: "A statement that a person may submit comments or contest the draft permit within 30 days after publication of the notice..." In accordance with ARSD 74:36:09:03, DENR is required to provide the following statement in the public notice for a PSD air quality permit: "a person may submit comments or contest the draft permit within 30 days after the publication of the notice." DENR complied with these requirements by placing the statement identified above in the public notice and by further identifying the date certain

for the submission of public comments in the Air Quality Program's website for both the draft PSD air quality permit and the draft Title V air quality permit.

Regarding the comment concerning the start of EPA's 45 day review and the citizen's petition for the Title V air quality permit, ARSD 74:36:05:21 states that EPA's 45 day review period begins after receipt of the proposed Title V air quality permit from DENR. EPA's 45 day review period does not start at the end of the public notice period. In accordance with ARSD 74:36:05:20.1, DENR will submit the proposed permit to EPA at the end of the public notice period if no comments are received, after DENR responds to public comments, or after a contested case hearing, depending on the circumstances specific to an application. ARSD 74:36:05:23 was written to meet the requirements in 40 CFR § 70.8(d), which provides persons with the right to petition EPA in writing within 60 days after EPA's 45 day review period.

EPA determined that the public notice procedures were equivalent to the federal public notice procedures when it approved South Dakota's Title V air quality program and approved the PSD public notice procedures in South Dakota's State Implementation Plan. DENR followed the approved procedures for public noticing the draft PSD air quality permit and the draft Title V air quality permit.

2. One commenter is concerned that the public notice for the draft PSD air quality permit and draft Title V air quality permit do not properly inform the public that the two permitting actions are being taken concurrently, and that the draft Title V air quality permit proposes to incorporate the sulfur dioxide and nitrogen oxide emission limits that allow the Big Stone II project to forgo a PSD review and permit. The commenter believes this action was further confused by the draft PSD air quality permit not requiring a Title V air quality permit application until 12 months after commencing operation. The commenter believes this clarification is necessary in both public notices, since Otter Tail Power Company is accepting operational limits that allow Big Stone II to avoid a PSD review and permit for sulfur dioxide and nitrogen oxide.

Response: DENR disagrees that the public notice for the draft PSD air quality permit misinforms the public. DENR public noticed both the draft PSD air quality permit and draft Title V air quality permit concurrently to provide the public with the opportunity to review both permits and, in particular, the procedure established by the permits for ensuring that the sulfur dioxide and nitrogen oxide emissions will be maintained at current levels. This was specifically mentioned in the public notice for the draft PSD air quality permit.

Further, DENR provided a Statement of Basis for the draft permits, which is a written document that identifies what state and federal rules are applicable to the proposed operation, and explains the process the permit writer followed to establish emission limits; testing, record keeping, reporting requirements; etc. in the draft permits. Both the Statement of Basis and draft permit for each permit was concurrently available to the public for their review and comment. The statement that "Otter Tail Power Company has accepted enforceable limits which maintain the nitrogen oxide and sulfur dioxide emissions at the current levels" informs

the public that the sulfur dioxide and nitrogen oxide emissions from the Big Stone II project are not subject to a PSD review and permit because Otter Tail Power Company accepted operational limits. The Statement of Basis for the draft PSD air quality permit explains that Big Stone II is subject to a PSD review and permit for particulate matter, volatile organic compounds, carbon monoxide, lead, fluorides, and sulfuric acid mist. In accordance with ARSD 74:36:05:03.01, which was written to meet the requirements of 40 CFR § 70.5(a), Otter Tail Power Company is required to submit a Title V air quality permit application for the Big Stone II project within 12 months after commencing operation to incorporate particulate matter, volatile organic compounds, carbon monoxide, lead, fluorides, and sulfuric acid mist requirements in the Title V air quality permit.

The requirements necessary for the Big Stone II project to avoid a PSD review and permit for sulfur dioxide and nitrogen oxide are discussed in the Statement of Basis for the draft Title V air quality permit and are incorporated in the draft Title V air quality permit that was public noticed.

In accordance with ARSD 74:36:05:17, which was written to meet the requirements of 40 CFR § 70.7(h), the requirements for a public notice are identified and the requirements do not specify that the date the public notice period ends must be specifically identified as a date certain in the public notice.

DENR provided the necessary information in both public notices and provided the detailed information necessary for the public to understand the proposed permits in the Statement of Basis. The public notice for the draft PSD air quality permit and draft Title V air quality permit met the requirements of the permitting procedures that EPA approved in South Dakota's Title V air quality permit program and SIP.

3. One commenter asserts that Otter Tail Power Company has not even requested a Title V air quality permit for Big Stone II via submittal of a Title V permit application. The commenter contends that the Title V air quality permit must include all requirements applicable to those units.

Response: In response to the original comments on the draft PSD air quality permit, DENR and Otter Tail Power Company agreed that the equipment associated with sulfur dioxide and nitrogen oxide emissions would be covered under the Title V air quality permit. The inclusion of sulfur dioxide and nitrogen oxide operational limits are discussed in the Statement of Basis for the draft Title V air quality permit. The applicable requirements for the Big Stone II equipment associated with sulfur dioxide and nitrogen oxide emissions are incorporated in the draft Title V air quality permit.

In accordance with ARSD 74:36:05:03.01, Otter Tail Power Company is required to incorporate the requirements for particulate matter, volatile organic compounds, carbon monoxide, lead, fluorides, and sulfuric acid mist emissions associated with the Big Stone II project into a Title V operating permit within 12 months of commencing operation. Therefore, the requirements for the Big Stone II project related to particulate matter, volatile

organic compounds, carbon monoxide, lead, fluorides, and sulfuric acid mist emissions are not required at the issuance of the Title V air quality permit.

The draft Title V air quality permit does contain all applicable requirements associated with sulfur dioxide and nitrogen oxide emissions related to Big Stone II. The applicable requirements associated with particulate matter, volatile organic compounds, carbon monoxide, lead, fluorides, and sulfuric acid mist emissions will be incorporated once DENR receives the Title V air quality application for these pollutants, which is required to be submitted within 12 months of commencing operation of Big Stone II.

4. One commenter requested that all the plant owners be listed in the description of the facility and identify Otter Tail Power Company as the operator.

Response: DENR agreed and the proposed change was incorporated in the draft PSD air quality permit that was public noticed in January 2008.

5. One commenter requested that “as updated” be added to permit condition 1.1 following “July 20, 2005” in the fifth line of the first paragraph. In Table 1 of the same permit condition, it was requested that “low NO_x burners” be added to the list of controls for Unit #13, add Unit #16 cooling tower drift eliminator efficiency of 0.0005%, and the operating rate of Unit #24 should be corrected to 11 tons per hour.

Response: DENR agrees to make the proposed changes with the following exceptions. The “low NO_x burners” will be added to the description of Unit #13 instead of adding it to the control device list. In addition, the drift eliminator efficiency is already a requirement in permit condition 4.7 of the draft PSD air quality permit and does not need to be added to the table. The changes that DENR agreed to were incorporated in the draft PSD air quality permit that was public noticed in January 2008. Table 1 in the original draft PSD air quality permit is Table 1-1 in the draft PSD air quality permit.

6. One commenter requested the insertion of “(i.e. when permanent structure is installed)” at the end of the first sentence in permit condition 3.4.

Response: DENR agrees to make the following change to the first sentence in permit condition 3.4: “In accordance with ARSD 74:36:09:02, as referenced to ARSD 74:36:05:16.01(9), the owner or operator shall notify the Secretary of the date construction commenced on the permanent structures for the pulverized coal-fired boiler system.” The change that DENR agreed to was incorporated in the draft PSD air quality permit that was public noticed in January 2008.

7. One commenter requested that the first quarterly report required in permit condition 3.6 be submitted at the end of the calendar quarter following the initial startup notification prescribed in permit condition 3.5.

Response: The referenced permit condition is one of the conditions associated with the plantwide sulfur dioxide and nitrogen oxide limits that DENR agreed to remove from the draft PSD air quality permit and include in Otter Tail Power Company's Title V air quality permit for Big Stone I. In permit condition 5.9 of the draft Title V air quality permit that was public noticed in January 2008, DENR requires the reporting of sulfur dioxide and nitrogen oxide emissions following the initial startup of Unit #13. Notification of the initial startup of Unit #13 is required in permit condition 5.7 of the draft Title V air quality permit that was public noticed in January 2008.

8. One commenter requested that the title of Table 2 of the original draft PSD air quality permit be revised to "PM10 BACT/Visibility Emission Limits" and revise footnote 2 as follows, "If the initial testing demonstrates an emission rate less than 0.03 pounds per million Btus (filterable and condensable), the emission limit shall be lowered to the emission rate achieved following two additional successive annual performance tests plus two standard deviations of the nine test runs or 0.018 pounds per million Btus, whichever is greater. In no case shall the limit be greater than 0.03 pounds per million Btus (filterable and condensable)."

Response: As discussed in the original Statement of Basis, there are issues involving the condensable fraction associated with the proposed particulate matter limit. DENR agrees with changing the proposal for lowering the particulate matter emission limit as suggested. However, the particulate matter testing language will have to be updated so the limit can be readily revised. DENR does not agree to change the title of the table. The change that DENR agreed to was incorporated in the draft PSD air quality permit that was public noticed in January 2008. Table 2 in the original draft PSD air quality permit that was public noticed in June 2006 is Table 4-1 in the draft PSD air quality permit that was public noticed in January 2008.

9. One commenter requested that Table 3 of the original draft PSD air quality permit be revised to reflect compliance with the carbon monoxide limit for Unit #13 based on a 30-day rolling average and that for Unit #14 and #15 based on the average of three test runs.

Response: The original compliance time was based on using a stack test for compliance determinations. By using a continuous emission monitoring system to determine compliance with the carbon monoxide emissions limits, DENR agrees that the compliance determination for the continuous emission monitoring system should be based on a 30-day rolling average. DENR agreed to make the proposed change and the change was incorporated in the draft PSD air quality permit that was public noticed in January 2008. Table 3 in the original draft PSD air quality permit that was public noticed in June 2006 is Table 4-2 in the draft PSD air quality permit that was public noticed in January 2008.

10. One commenter requested that Table 4 be revised to include the New Source Performance Standard emission limit as BACT for Unit #14 and #15.

Response: The new source performance standard for stationary compression ignition internal combustion engines was final on July 11, 2006. The BACT limit is for volatile

organic compounds and not a combination of nitrogen oxide and volatile organic compounds as this standard requires. However, since the units are being limited to 500 hours of operations, DENR agreed to make the proposed change and the change was incorporated in the draft PSD air quality permit that was public noticed in January 2008. Table 4 in the original draft PSD air quality permit that was public noticed in June 2006 is Table 4-3 in the draft PSD air quality permit that was public noticed in January 2008.

11. One commenter requested that footnote 1 for Table 6 be revised to state that compliance with the emission limit will be based on the average of three test runs, which is consistent with EPA's test methodology.

Response: DENR agreed to make the proposed change and the change was incorporated in the draft PSD air quality permit that was public noticed in January 2008. Table 6 in the original draft PSD air quality permit that was public noticed in June 2006 is Table 4-5 in the draft PSD air quality permit that was public noticed in January 2008.

12. One commenter requested that the New Source Performance Standards of stationary compression ignition internal combustion engines be included in Chapter 5.0 of the draft PSD air quality permit for Unit #14 and #15. The commenter provided suggested language.

Response: DENR agreed to add the New Source Performance Standards of stationary compression ignition internal combustion engines for Unit #14 and #15 in Chapter 5.0 of the draft PSD air quality permit that was public noticed in January 2008. The revised language is included in permit condition 5.8 of the draft PSD air quality permit that was public noticed in January 2008.

13. One commenter requested that the wording in permit condition 5.1 of the draft PSD air quality permit be revised as proposed in the comments.

Response: DENR agreed with the proposed change but not the exact wording. The wording DENR agreed to was incorporated in the draft PSD air quality permit that was public noticed in January 2008. However, since that time certain sections of this New Source Performance Standard were vacated by the court. Therefore, DENR is recommending that subsection (5) of permit condition 5.1 of the draft PSD air quality permit be deleted since the requirement is no longer valid.

14. One commenter requested that the word "Training" in permit condition 5.2 be replaced with "Trading".

Response: DENR agreed with the proposed change and the change was incorporated in the draft PSD air quality permit that was public noticed in January 2008. However, since that time certain sections of this New Source Performance Standard were vacated by the court. Therefore, DENR is recommending that permit condition 5.2 of the draft PSD air quality permit be deleted since the requirement is no longer valid.

15. One commenter requested that footnote 1 for Table 8 be revised to state that compliance with the emission limit will be based on the average of three test runs, which is consistent with EPA's test methodology.

Response: DENR agreed to make the proposed change. However, the referenced condition is one of the conditions associated with the existing facility that DENR has agreed to remove from the draft PSD air quality permit and include in Otter Tail Power Company's Title V air quality permit. The proposed change was incorporated in the draft Title V air quality permit that was public noticed in January 2008. Table 8 in the original draft PSD air quality permit that was public noticed in June 2006 is Table 6-3 in the draft Title V air quality permit that was public noticed in January 2008.

16. One commenter requested that biodiesel be added to the description of the fuels in permit condition 5.7.

Response: DENR agreed to make the proposed change. However, the referenced condition is one of the conditions associated with the existing facility that DENR has agreed to remove from the draft PSD air quality permit and include in Otter Tail Power Company's Title V air quality permit. The proposed change was incorporated in the draft Title V air quality permit that was public noticed in January 2008. Permit condition 5.7 in the original draft PSD air quality permit that was public noticed in June 2006 is permit condition 9.3 in the draft Title V air quality permit that was public noticed in January 2008.

17. One commenter requested that the language in permit condition 6.12 be revised to require that biodiesel complies with the specification for fuel oil numbers 1 or 2.

Response: DENR agreed to make the proposed change. However, the referenced condition is one of the conditions associated with the existing facility that DENR has agreed to remove from the draft PSD air quality permit and include in Otter Tail Power Company's Title V air quality permit. The proposed change was incorporated in the draft Title V air quality permit that was public noticed in January 2008. Permit condition 6.12 in the original draft PSD air quality permit that was public noticed in June 2006 is permit condition 7.10 in the draft Title V air quality permit that was public noticed in January 2008.

18. One commenter requested that the language in permit condition 6.13 be revised by correcting the sulfur content from 0.015 to 0.05 to be consistent with permit condition 5.7. In addition, add biodiesel that complies with the specification for fuel oil numbers 1 or 2.

Response: DENR agreed to make the proposed change. However, the referenced condition is one of the conditions associated with the existing facility that DENR has agreed to remove from the draft PSD air quality permit and include in Otter Tail Power Company's Title V air quality permit. DENR revised this condition to require the sulfur content to be initially tested using a grab sample from the oil in the tanks. The proposed change was incorporated in the draft Title V air quality permit that was public noticed in January 2008. Permit condition 6.13 in the original draft PSD air quality permit that was public noticed in June 2006 is

permit condition 7.9 in the draft Title V air quality permit that was public noticed in January 2008.

19. One commenter stated that Big Stone II proposes economic growth in a manner inconsistent with the preservation of existing clean air resources and can only add to the air pollution problems in the United States. The commenter alleges that limiting Big Stone's pollution output will not decrease our nationwide pollution or ensure that our clean air resources are preserved and that wind energy preserves our clean air resources because it generates electricity with no air emissions.

Response: DENR's review of Otter Tail Power Company's application verifies that the National Ambient Air Quality Standards that protects the public's health will not be violated by the Big Stone II project. In addition, Otter Tail Power Company monitored the ambient air in the area for one year and did not monitor an exceedance of the primary National Ambient Air Quality Standards. DENR is monitoring the ambient air in Watertown, which is approximately 40 miles southwest from the proposed project and has not monitored an exceedance of the National Ambient Air Quality Standards for particulate matter.

Otter Tail Power Company is accepting limits that will restrict sulfur dioxide and nitrogen oxide emissions so that the combined emissions from the Big Stone I and Big Stone II plants will be less than the average emissions from Big Stone I in 2003 and 2004. In addition, Otter Tail Power Company emitted 189 pounds of mercury in 2004 and has agreed to not increase mercury emissions above 189 pounds once Big Stone II is operational. Therefore, the proposed project in some cases will likely decrease nationwide air pollution for some pollutants. The draft permits establish limits to make sure there will be no increase in air emissions for some pollutants.

DENR does promote wind energy but it can not require Otter Tail Power Company to construct wind turbines instead of a coal-fired power plant. See subsection (21) below for more detail. The Big Stone II project also includes the building of additional transmission lines. Otter Tail Power Company is proposing to build a transmission line with 1,000 megawatts of extra capacity in the transmission line, which is necessary for wind energy to expand in South Dakota and allow companies to provide green energy to the citizens of South Dakota and Minnesota.

20. One commenter stated that Big Stone II will be another source of the nitrogen oxide and sulfur dioxide pollution contributing to well-known public health problems. Notably, the Big Stone II project, as proposed, foregoes a PSD review for nitrogen oxide and sulfur dioxide.

Response: Based on the PSD program, a PSD review for sulfur dioxide and nitrogen oxide is required if the net emission increase exceeds the significant threshold of 40 tons per year per pollutant. Otter Tail Power Company is proposing to offset any increase of sulfur dioxide and nitrogen oxide emissions from the proposed Big Stone II project by reducing emissions from the existing Big Stone I facility. Once the Big Stone II facility is operational, both Big Stone I and II will emit less than the average emissions from Big Stone I in 2003

and 2004. As such, there will be no emission increase. Therefore, Otter Tail Power Company is foregoing a PSD review for sulfur dioxide and nitrogen oxide based on what is allowed under the PSD program.

Although Otter Tail Power Company was not required to evaluate sulfur dioxide and nitrogen oxide emissions, DENR modeled the emissions from both facilities to ensure that the existing Big Stone I and addition of Big Stone II would not cause an exceedance of the National Ambient Air Quality Standards for sulfur dioxide and nitrogen oxide. DENR determined that the proposed project would not cause an exceedance.

21. One commenter stated that Big Stone II proposes to use subbituminous coal as its main fuel. The availability of subbituminous coal to Big Stone II is fully dependent on rail transportation. In order to address environmental concerns by using cleaner-burning fuel, Big Stone II will be imposing economic risks on consumers. These risks are unacceptable in light of the availability of wind energy as an economic source of energy.

Response: 40 CFR §52.21(b)(12) defines BSCT as an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act, which would be emitted from any proposed major stationary source or major modification which the permitting authority, on a case-by-case basis and taking into account energy, environmental, and economic impacts and other costs, determines is achievable for the source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event is application of BACT to result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR parts 60 and 61. If it is determined that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Any such standard is required, to the degree possible, to set forth the emissions reduction achievable by implementation of the design, equipment, work practice or operation, and must provide for compliance by means which achieve equivalent results.

As noted in the statement of basis for the project, the PSD rules do not mandate or require that the major source or major modification be redesigned in reviewing the available methods, systems, and techniques (including innovative fuel combustion techniques). In the analysis applicable to the proposed Big Stone II project, the proposed source/major modification is the super critical pulverized coal-fired boiler. This source pulverizes the coal and combusts the coal as a fuel in a boiler. The boiler produces steam that turns a turbine connected to an electric generator that generates electricity.

Wind energy has few similarities with the super critical coal-fired boiler proposed by Otter Tail Power Company. Wind energy is mainly used by power companies for peaking purposes when the super critical coal-fired boiler will be used to provide electricity for base

load. Therefore, wind power is not an available method, system, or technique in this case that may be applied directly to a super critical coal-fired boiler to reduce air emissions.

This interpretation is verified by EPA's draft 1990 New Source Review Workshop Manual. The 1990 manual notes that the BACT requirements are not a means to redefine the source when considering available control alternatives. As noted in EPA guidance, EPA would not require a source to consider a natural gas combustion turbine instead of a coal-fired boiler in the BACT analysis.

22. One commenter asked why the facility is using a single baghouse to control air emissions from all three coal silos? Is this practice common? Would multiple baghouses do a better job of reducing air emissions?

Response: The design of a baghouse depends on several factors, such as particulate size, dust loading, temperature, moisture content, acid gas concentration, volume of gas, etc. The efficiency of one baghouse versus multiple baghouses is dependent upon the design of the system and not on the number of baghouses. Therefore, one baghouse can be just as efficient at controlling particulate matter emissions as three baghouses. It all depends on how the system is designed.

23. Several commenters suggested that the proposed project(s) or the existing operations were generating air pollution that was unhealthy to breathe. DENR is providing an overall response to that generic comment.

Response: Section 160 of the Clean Air Act notes that the purpose of the prevention of significant deterioration is the following:

- (1) To protect public health and welfare from any actual or potential adverse effect which in the Administrator's judgment may reasonably be anticipated to occur from air pollution or originate as emissions to the ambient air, notwithstanding attainment and maintenance of all national ambient air quality standards;
- (2) To preserve, protect, and enhance the air quality in national parks, national wilderness areas, national monuments, national seashores, and other areas of special national or regional natural, recreation, scenic, or historic value;
- (3) To insure that economic growth will occur in a manner consistent with the preservation of existing clean air resources;
- (4) To assure the emissions from any source in any State will not interfere with any portion of the applicable implementation plan to prevent significant deterioration of air quality for any other State;
- (5) To assure that any decision to permit increased air pollution in any area to which this section applies is made only after careful evaluation of all the consequences of such a decision and after adequate procedural opportunities for informed public participation in the decision making process.

The National Ambient Air Quality Standards established through the federal Clean Air Act in 40 CFR Part 50 have been adopted by DENR in ARSD Chapter 74:36:02. The National

Ambient Air Quality Standards were established to protect human health, safety, and welfare. South Dakota does not have a non-attainment area, which is an area not meeting the National Ambient Air Quality Standards.

South Dakota has monitored particulate, sulfur dioxide, nitrogen oxide, and ozone throughout South Dakota to verify that South Dakota is attaining the National Ambient Air Quality Standards. As Table #1 indicates, South Dakota is meeting the National Ambient Air Quality Standards. In addition, the monitors demonstrate that the sulfur dioxide and nitrogen oxide emissions from all sources, including both those that consume the PSD increments and those that do not consume the PSD increments, are below the allotted Class II PSD increments (the increase of emissions associated with new sources in all areas of South Dakota except for Badlands and Wind Cave national parks).

Table #1 – National Ambient Air Quality Standard Comparison

Site	PM 2.5 ¹ 24-hour	PM 2.5 ² Annual	PM10 ³ 24-hour	PM10 ⁴ Annual	SO2 ⁵ 3-hour	SO2 ⁶ 24-hour	SO2 ⁷ Annual	NOx ⁸ Annual	Ozone ⁹ 8-hour
NAAQS¹¹	65	15	150	50	0.500	0.140	0.030	0.053	0.08
Rapid City Library	17	7.3	34	20	-	-	-	-	-
Rapid City National Guard	17	7.4	83	31	-	-	-	-	-
Rapid City Credit Union	19	8.4	147	41	-	-	-	-	0.067
Black Hawk	-	-	44	19	-	-	-	-	-
Badlands	13	5.5	37	12	0.004	0.003	0.001	0.001	0.066
Sioux Falls KELO	25	10.5	44	22	-	-	-	-	-
Sioux Falls Hilltop	25	9.8	48	18	0.030	0.006	0.001	0.006	0.065
Brookings	24	9.6	57	24	-	-	-	-	-
Aberdeen	19	8.5	48	19	-	-	-	-	-
Watertown	24	10.2	67	25	-	-	-	-	-
Wind Cave	13	5.4	26	7	0.037	0.008	0.001	0.001	0.070
Big Stone Project	-	-	32	12	0.010	0.004	0.001	0.005	-

¹ – 98th percentile from 2005 and in micrograms per cubic meter;

² – Three year average 2003 to 2005 and in micrograms per cubic meter;

³ – 2nd maximum from 2005 and in micrograms per cubic meter;

⁴ – Three year average 2003 to 2005 and in micrograms per cubic meter;

⁵ – Maximum concentration from 2005 and in parts per million;

⁶ – Maximum concentration from 2005 and in parts per million;

⁷ – Annual average from 2005 and in parts per million;

⁸ – Annual average from 2005 and in parts per million;

⁹ – Three year average 2003 to 2005 and in parts per million;

- ¹⁰ – The Big Stone project covers the time period October 2001 through October 2002; and
- ¹¹ – NAAQS stands for National Ambient Air Quality Standard.